ZANZIBAR GOVERNMENT

ANNUAL
MEDICAL AND SANITARY REPORT

FOR THE

year ended 31st December, 1938

PRICE: Shs. 3/50

ZANZIBAR
Printed and Published by the Government Printer
1939

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OFFICE OF THE
DIRECTOR OF MEDICAL SERVICES,

Zanzibar, 18th March, 1939.

Sir,

I have the honour to submit for the information of His Excellency the British Resident and for transmission to the Right Honourable the Secretary of State, the Medical Report on the Health and Sanitary Conditions of the Zanzibar Protectorate for the year 1938, together with the Returns, etc., appended thereto.

I have the honour to be,
Sir,
Your obedient servant,

W. LESLIE WEBB,
Director of Medical Services.

THE HONOURABLE,
CHIEF SECRETARY TO THE GOVERNMENT,
ZANZIBAR.

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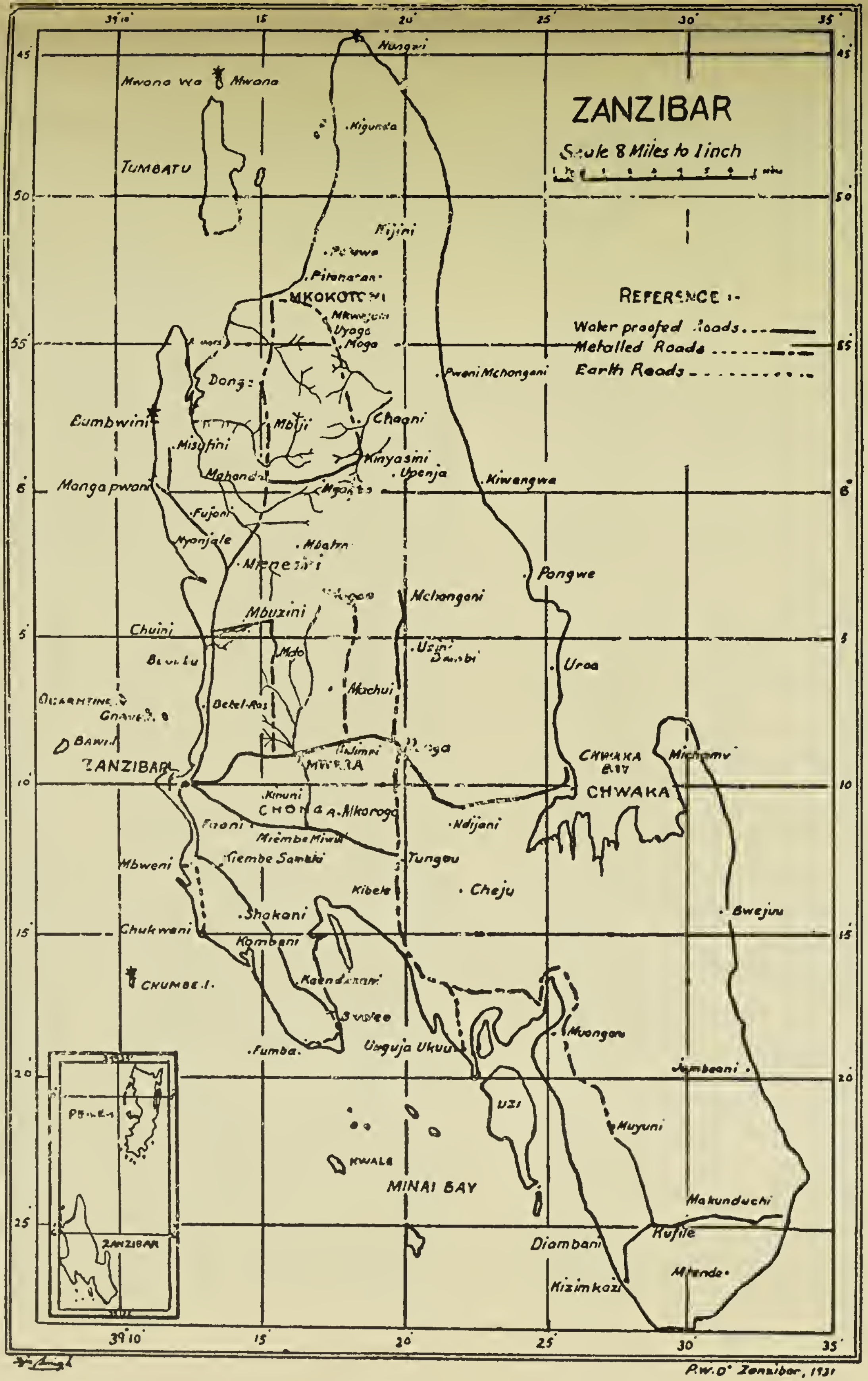
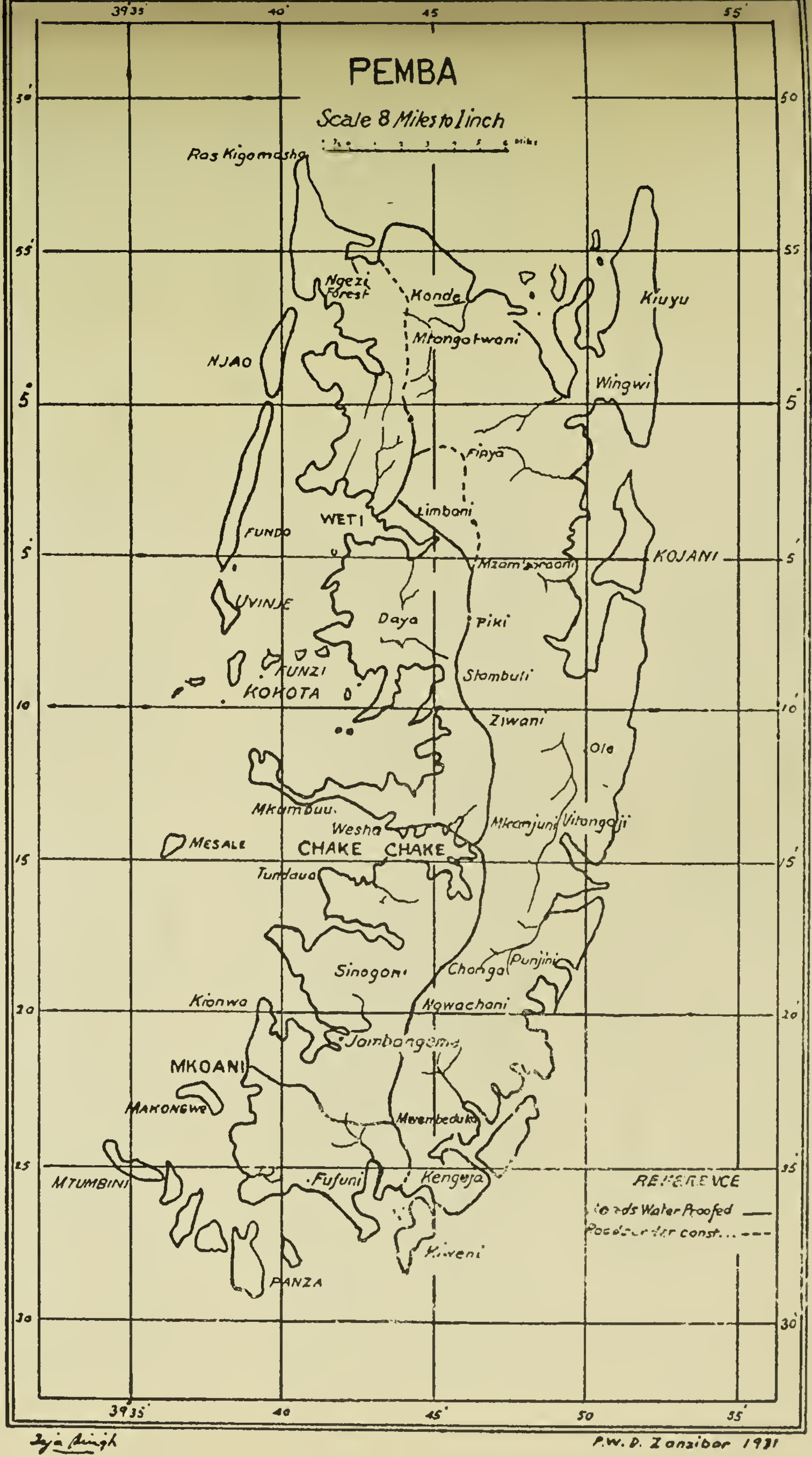


P.W.D. Zanzibar, 1931



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SECTION I.

ADMINISTRATION.

GENERAL REVIEW.

The following comments refer to the more important matters dealt with in the report.

Nutrition.—The visit paid to Zanzibar by Dr. Platt, Director of Central Organization for the study of nutritional problems in the Colonies, stimulated fresh interest in the most important problem of nutrition and consideration was given by Government to means whereby the dietary of the natives, which is demonstrably deficient, could be improved. The provision of supplementary meals to school children, the better utilization of school gardens, and the improvement of food crops by the introduction of new and more valuable species of crops already grown in the Protectorate were the principal matters upon which decisions were taken.

School Medical Service.—The systematic examination of school children by medical officers and dentist was continued as in the last two years, and advice given on questions of hygiene; treatment was afforded where necessary. Whilst no spectacular improvement as a result of previous advice and assistance was noticeable, small improvements in hygienic standards generally gave an indication that the time and energy spent on this service is not wasted but is having a slow but certain effect for the good. The nutritional state of the children appears to have shown fairly marked improvement, but this must be ascribed to improvement in the financial position of the parents following the very heavy clove crop, as the intentions of Government in this matter described in a previous paragraph had not been put into effect by the end of the year. Cleanliness generally showed a fairly marked improvement, and this will undoubtedly be assisted in due course by a policy introduced by the Education Department of providing clean clothes for children undergoing treatment for scabies, to allow alternate daily wearing and boiling. The hygienic condition of the children's mouths showed considerable improvement, as a result of pressure exerted by the dentist to obtain a daily tooth cleaning parade at every school. Although these parades are by no means either general or very thorough yet, their result is reflected in a noticeable decrease in dirty mouths seen and a less but significant decrease in dental caries. The results recorded after three years of effort are encouraging even though it is obvious that more remains to be done.

Services for Women and Children.—(1) The results of the third year of the inauguration of the policy of providing separate clinics for women and children, under the charge of a woman medical officer, has emphasized the great need that existed and still exists for this service. The leave of the first woman medical officer appointed to the service fell due during the year, and there was a gap of some weeks before her relief reached Zanzibar resulting in a temporary falling off of attendances. The appointment of a second woman medical officer marked the determination of Government to pursue the policy of separate provision for women and children, and on the return of the first officer from leave, it is proposed to provide in the island of Pemba comparable service to that obtainable in Zanzibar.

(2) The extension of these services to rural dispensaries by weekly visits by a nursing sister and monthly visits by the woman medical officer has been extended and has proved most popular. The sister's visiting day in the rural areas has resulted in greatly increased attendances and women and children are presenting themselves for treatment who would never come within the purview of men departmental officers. If the standard of treatment afforded by nursing sisters is not of the very highest, the new contacts effected are so valuable as to offer a very reasonable hope of revolutionary extension of influence

amongst the peasant natives, only made possible by the policy adopted. The extended use of nursing sisters in this capacity affords the most hopeful and economical method at our disposal of exerting an influence for hygienic improvement upon the rural peasant population of the Protectorate.

(3) In Pemba pending the appointment of a woman medical officer to the island the women and children's out-patient departments at the two hospitals in Chake Chake and Wete have been handed over to the nursing sister, who only refers cases to the medical officer which she does not feel competent to deal with herself. The result has been a marked increase of attendances of women and children. As in the case of Zanzibar, the Pemba sisters also pay weekly visits to rural dispensaries with the same gratifying results and the same hope of eventual closer contact with the rural peoples operating to an advancement of hygienic standards. Although the service is so new, and the results obtained comparatively small, there is no doubt as to its effectiveness as a major power in the dissemination of the benefits of Western hygienic knowledge to a backward and conservative people who are greatly in need of improvement in their ways of living.

Vocational Training of non-European Personnel.—(1) Plans for the inauguration of a training scheme for native personnel were again given much consideration throughout the year. The desire and necessity is to replace the existing staff of hospital orderlies and ayahs, who are in the usual sense untrained and usually illiterate, and the attendants in charge of rural dispensaries, who are insufficiently trained particularly in the practical application of their knowledge, by a body of employees fully trained over a period of three or more years in the theoretical and practical aspects of the work they will be called upon to perform. Those who have successfully passed through the period of fundamental hospital training will enter a "service" through which they will pass according to their knowledge, character and usefulness, and from which will be chosen candidates for higher training as Sanitary Inspectors, Midwives, Health Visitors and Laboratory Assistants, the whole to form a comprehensive scheme of training for all subordinate native personnel other than those who perform the duties of doctors, and offering a career to all who passed through the initial stages in which each could find a place according to ability and knowledge.

The inauguration of such a scheme calls for considerable capital expenditure principally in connexion with alterations to the hospital to render it suitable for teaching purposes, the building of hostels for the accommodation of pupils in training and the provision of a Maternity Training Centre. It also calls for an increase in recurrent expenditure, not only for the provision of teaching staff but for increased emoluments for the products of the scheme. Several proposals for the implementation of the scheme have been prepared and abandoned on account of cost, and the year has been devoted to an endeavour to bring the most hopeful of the proposals to attain the desired end within the financial limitations of the Protectorate.

(2) In the meantime, in advance of the scheme, it has been considered desirable to undertake such training of native personnel as circumstances permit, in order not only to provide replacements for casualties, but to allow extension of services. The most important and successful of enterprises in the second category has been the training of Sanitary Inspectors undertaken under the direction of the Medical Officer of Health. In 1937 a class of nine candidates, three of whom were Africans, sat for the Examination of the Royal Sanitary Institute, and of these five passed the examination including one African. This was notable in that it was the first time that this examination had been held in East Africa, and that no other candidates but those from Zanzibar competed. At present there is a class of 10 in training, including four Africans, and it is expected that six of these together with three of those who failed previously will be successful in the 1939 examination to be held in December. Those who are expected to succeed include six Africans all destined for work in rural areas, constituting a new service in which the one successful African and the two who failed in the last examination are at present employed.

(3) During the year five girls and five boys of the requisite standard of education were employed at the hospital and afforded such vocational training as the existing organization permits. It is too early to say with what success this endeavour is likely to meet. Training is also afforded to menial staff, such as mosquito searchers, sanitary orderlies, etc., with a view to fitting them better for the work they are required to carry out, and as affording an incentive to them to fit themselves for promotion to more responsible posts. This policy has had a beneficial effect on recruiting and generally on the efficiency of the sanitary side of the service.

Preventive Measures.—(*a*) *Ancylostomiasis.*—The provision of a sum of £800 in estimates for 1938 allowed the policy of providing pit latrines for the population generally to be very greatly extended. In 1935 boring apparatus was obtained, and an endeavour was made to popularize latrines by digging the pit for nothing and providing a cement slab at cost price. These efforts were not very successful during this or the subsequent year, as the cost of the slab (Shs. 3) was prohibitive to most of the rural peasantry. The provision of funds in 1938, together with a cheapening of the cost of boring apparatus and the cement slab, and with the adoption of a policy to provide both bore-hole and slab free, resulted in a very great extension of these activities, and by the end of the year some 3,000 latrines had been dug and fitted, of which over 700 were in use. Observations are being carried out with regard to popularity, extent of their use, the rate of filling and other matters, upon which it is too early to express an opinion except that their popularity is undoubted.

(*b*) *Bilharzia.*—Dr. A. Mozley who had been investigating the question of bilharzia disease in Zanzibar and Tanganyika Territory under the auspices of the London School of Tropical Medicine, brought his work to a close during the year. In advance of the publication of his report, the department gained much valuable advice from him with regard to measures designed for the eradication of the disease, and in one instance steps are being taken this year to this end in connexion with an infected pond which constitutes both the water supply and the focus of infection of a group of villages in the south of the island. Although it is too early to evaluate results, it is confidently expected that the completion of the undertaking will result in considerable diminution, if not in eradication, of the disease in that area.

(*c*) *Malaria.*—Anti-malarial measures undertaken during this and previous years have succeeded in practically eliminating the breeding of anopheles mosquitoes in Zanzibar town. The insects still find their way into the town however from a zone lying immediately outside the boundaries, and increasing attention is being given to this zone. In Wete township in Pemba and to a less extent in Chake Chake township, measures taken have resulted in a very considerable decrease in breeding areas, and to an improvement of the amenities of the inhabitants. Pending consideration of the report of Dr. D. D. McCarthy relating to his investigations undertaken in the question of malaria generally in the Protectorate under funds granted by the Colonial Development Committee, which was submitted towards the end of the year, no considerable measures have been taken with regard to malaria prevention in rural areas outside townships.

(*d*) *Leprosy.*—A visit was paid to the Walezo Leper Settlement in Zanzibar by Dr. E. Muir, Secretary of the British Empire Leprosy Relief Association, who expressed satisfaction of the results of the policy of voluntary segregation in force since the repeal of the Leprosy Decree in 1937. The numbers of inmates of the two leper villages have increased a little since compulsory was replaced by voluntary segregation, though not to the expected extent. Lepers are not seen, however, outside the segregation villages and there is no reason to think that many exist.

(*e*) *Miscellaneous.*—(i) The Town Planning Board was reconstituted and a number of meetings were held and recommendations made with regard to building regulations, the amendment and replacement of the Town Planning

Decree, the production of suitable maps and other matters necessarily preliminary to the active participation of the Board in matters of township improvement.

(ii) The policy of providing an increased number of public latrines and wash houses in townships was pursued, with considerable improvement to the amenities available for the town dwellers.

(iii) The milk supply of Zanzibar town was given extensive consideration and the feasibility of installing a pasteurization plant was reviewed. It was found, on the receipt of quotations from the Crown Agents for the Colonies, that the proposal was too expensive for the resources of the Protectorate, and it was decided to expend what sums were available to the improvement of supplies at the source.

Principal Appointments, Promotions, Changes, etc.

(A) STAFF.

	Date.	
	From	To.
Appointments:—		
Miss M. J. E. McLoughlin, to be Nursing Sister ...	5- 8-38	
Dr. A. C. Freeth, to be Medical Officer of Health and Port Health Officer ...	30- 1-38	23- 9-38
Dr. S. W. T. Lee, to be Medical Officer of Health and Port Health Officer ...	24- 9-38	
Dr. W. M. Hill, to be Medical Officer ...	17- 9-38	
Acting Appointments:—		
Miss M. K. O'Shea, Nursing Sister, to act as Matron ...	1- 1-38	18- 2-38
Miss M. K. O'Shea, Nursing Sister, to act as Matron ...	2-11-38	31-12-38

(B) LEGISLATION AFFECTING PUBLIC HEALTH ENACTED DURING THE YEAR.

Government Notice No. 42	The Public Health (Offensive Trades) (Sullage and Cess Pits) (Amendment) Rules, 1938.
Government Notice No. 43	The Public Health (Pemba Local Sanitary Board) Order, 1938.
Government Notice No. 46	The Public Health (Recognized Family Vaults) Order, 1938.
Government Notice No. 59	The Public Health (Recognized Family Vaults) (No. 2) Order, 1938.
Government Notice No. 60	The Public Health (Recognized Family Vaults) (No. 3) Order, 1938.
Government Notice No. 61	The Public Health (Appointment of Cemeteries) Order, 1938.

(C) FINANCIAL.

Table of Actual Expenditure.

	£ 1935	£ 1936	£ 1937	£ 1938
Medical Department ...	36,575	38,098	40,427	40,158
Municipal Votes controlled by Medical Department	7,113	7,144	7,557	7,385
Grants-in-aid ...	1,716	230	230	
Total ...	45,404	45,472	48,204	47,543
Total Revenue of the Protectorate ...	457,114	475,444	494,828	465,381
Percentage of Total to Total Revenue ...	9.93	9.56	9.74	10.36
Total Revenue of the Department ...	3,993	3,696	3,805	4,492

SECTION II.

PUBLIC HEALTH.

(A) GENERAL REMARKS.

Returns for the Year.—Detailed figures appear in Table A, Section VI at the end of the report. A comparison between those for 1938 and past years follows:—

	1934	1935	1936	1937	1938
New cases ...	159,686	130,115	128,235	125,542	121,361
In-patients ...	4,463	3,853	4,413	4,673	5,099
Total Attendances ...	536,242	444,175	459,170	448,379	406,639
Surgical Operations (major) ...	1,299	1,151	1,016	954	1,218
Surgical Operations (minor) ...	3,370	2,683	2,295	3,220	3,143

The proportion of female to total attendances (new cases) remained more or less stationary during the year, except at Wete, where there was an increase following on the opening of a new out-patient department for women under the charge of a nursing sister.

The relative proportions of the two sexes attending at all units for treatment are shown in the following table:—

	1934	1935	1936	1937	1938
	%	%	%	%	%
Males ...	73.6	73.9	71.4	72.8	73.0
Females ...	26.4	26.1	28.6	27.2	27.0

The principal causes of deaths in Government Hospitals during the last five years were:—

	1934	1935	1936	1937	1938
Total deaths ...	446	418	470	476	531
Senility ...	127	75	135	136	104
Pulmonary tuberculosis ...	50	50	49	45	56
Pneumonia ...	26	20	29	42	80
Ancylostomiasis ...	10	17	13	10	17
Diseases of the Heart, Veins and Arteries	15	11	11	11	16

Old age still remains the most common cause of death in institutions because of the large number of aged people maintained in the Walezo Poor House.

I. GENERAL DISEASES.

The diseases treated at the Government hospitals and dispensaries during the last five years are grouped in percentages of cases treated in the following table:—

	1934	1935	1936	1937	1938
	%	%	%	%	%
Endemic, Epidemic and Infectious diseases	13	12	13	14	15
Nervous system ...	7	6	6	6	6
Respiratory system ...	7	8	7	8	8
Digestive system ...	27	30	26	26	26
Skin and cellular tissues ...	29	27	28	26	26
External causes ...	7	8	8	8	8
Others ...	10	9	12	12	11
	100	100	100	100	100

The Epidemic, Endemic and Infectious diseases group varies little from year to year in its relation to the total number of cases of all diseases treated. The largest numbers dealt with in this group were malaria, yaws and gonorrhœa.

The number of cases and deaths due to Epidemic, Endemic and Infectious diseases are shown in the following table:—

	Total numbers.	Epidemic, Endemic and Infectious Diseases.	Deaths.
1934	159,686	19,833	90
1935	130,115	15,394	83
1936	128,235	16,638	99
1937	125,542	17,477	80
1938	121,361	18,507	89

In former years it was the custom to detail the numbers of diseases which had occurred in the various groups, but the system, whereby Tables V and VI were so divided as to enable this to be done, has been abandoned and only notes on the more interesting and important conditions follow.

Diabetes.—This is not infrequent in Zanzibar, and is an unsatisfactory disease to treat as the diet of the people is so largely made up of carbohydrates. The treatment has been to reduce the carbohydrate intake and use insulin. One of the most satisfactory results of insulin treatment is that the patient puts on weight, but this does not appear to be the case with natives and the reason is, probably, that they take more carbohydrate than they should and more than can safely be controlled by insulin.

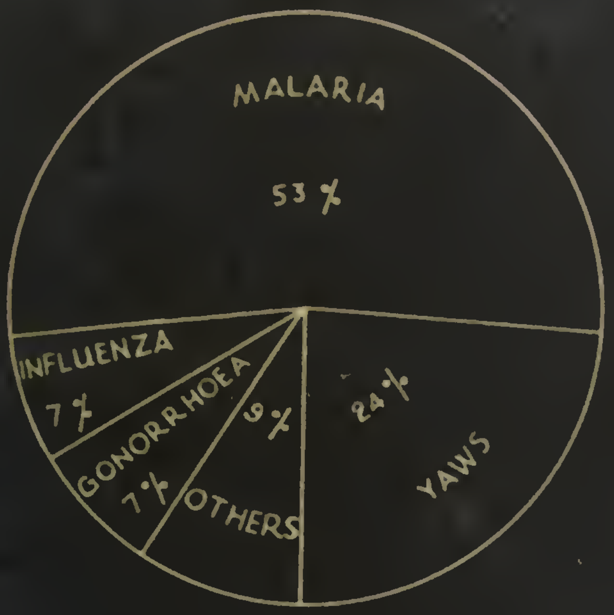
One point of social interest is the method by which the more primitive classes recognize their disease; they notice when they urinate in the open that ants collect at once at that place.

The number who have attended the diabetic clinic to date is 88. This included both males and females and Indians, Arabs, and Swahilis. One extraordinary point is that, except one case (a Hindu) recently admitted to hospital, they have all been Mohammedans. Whether the disease may be connected or not with diet it is difficult to say, but the fact remains that in Southern India, where diabetes is common, the majority of sufferers are Hindus. All diabetics are diagnosed after the blood estimation of their sugar so that no case of penal glycosuria could have been mistaken for diabetes.

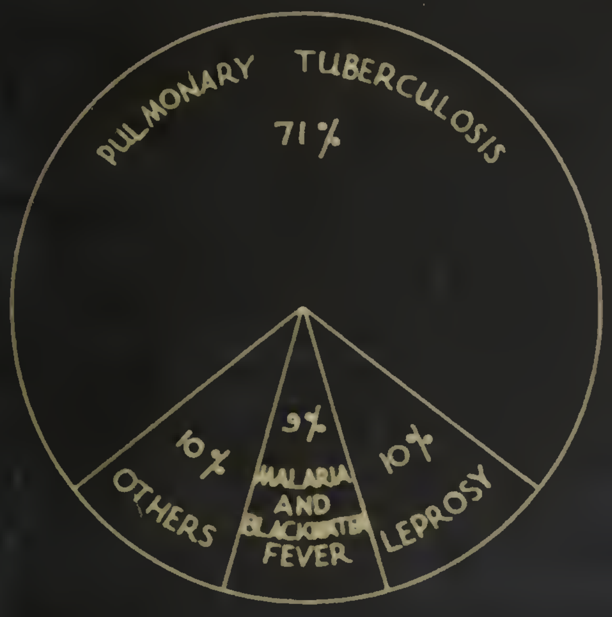
Malignant Disease.—The idea that natives do not get malignant diseases must be abandoned. An appreciable number have been found histologically to suffer from carcinoma of the testis, uterus, bladder and sarcoma of the bone; epithelioma of the mouth and the skin have all appeared in the records of the hospital. At present the treatment is purely surgical, often entailing mutilating operations, but the absence of radium precludes any other procedure. As usual patients report when the disease has often passed beyond the hopes of reasonable cure. One would expect epithelioma of the skin to be much commoner than it is bearing in mind the frequency of chronic ulceration of the skin, whether due to syphilis, old yaws or the indefinite ulcers of the skin so common in certain parts of the Protectorate.

Affections of the Nervous System.—Diseases of the eye formed the largest group in this category. All varieties of affections of the conjunctiva are the most common disorders seen—particularly trachoma. Trachoma is usual amongst Muscat and Hadramout Arabs and fairly prevalent amongst these living in Zanzibar. It is rare amongst Africans and no doubt different racial habits are the reason. The clinic for eye diseases is crowded and some 1,500 new cases were seen during the year; despite the fact that no segregation of the sexes is possible and all the attendants, and the doctor, are males, the women and children attend in much the same numbers as the men. Operative interference is now widely accepted and all types are carried out with the confidence of the patients.

THE PROPORTION OF EPIDEMIC ENDEMIC AND INFECTIOUS DISEASES.

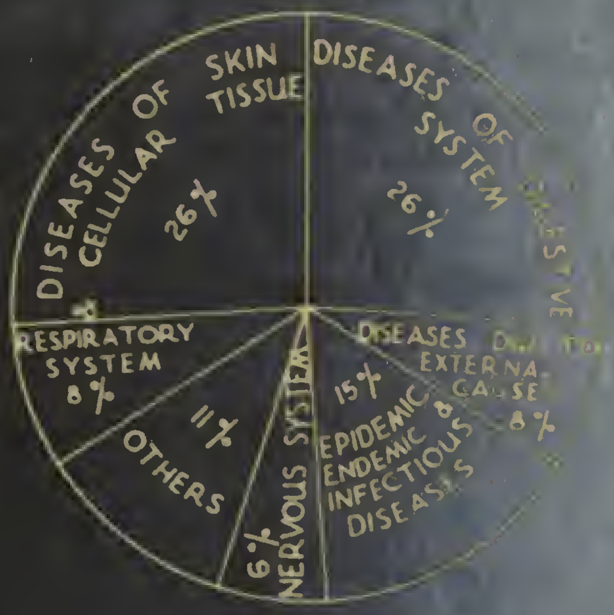


Total Incidence-18,507

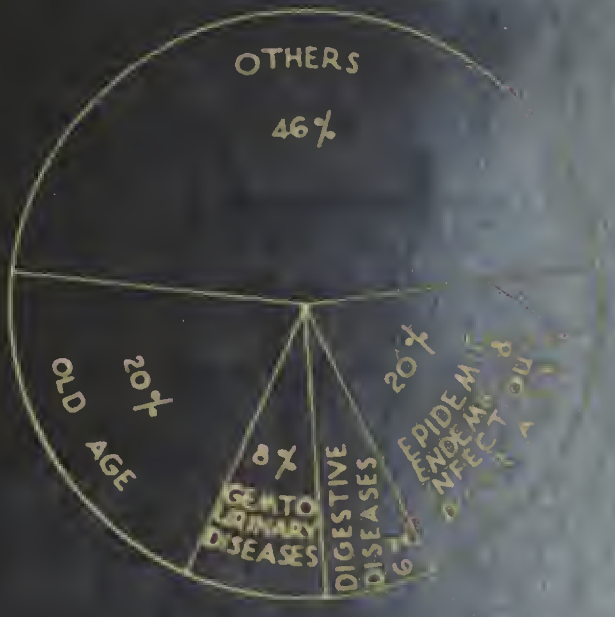


Total Deaths—78

THE PROPORTION OF EPIDEMIC, ENDEMIC, INFECTIOUS, SYSTEMIC AND OTHER DISEASES SHOWN AS PERCENTAGES OF TOTAL CASES



Total Incidence-1213[illegible]



Total Deaths-55

Drawn in Govt. Architect's Office

Respiratory System.—Pulmonary Tuberculosis.—Little advance has been made in the treatment of this disease, since its control is so closely united with the social conditions of the patients. It still remains acute and the necessity of the long stay in hospital required is not appreciated. As soon as a patient becomes afebrile he itches to go out and if not discharged goes away of his own accord. The cases admitted into hospital are, as a rule, infected bilaterally with extensive plastic pleurisy. Cavitation is also comparatively common and in some cases these are quite large. As far as possible pulmonary tuberculosis is treated with artificial pneumothorax, and some successes have been obtained by complete immobilization of the lung; but on discharge patients hardly ever attend for a refil so that it is not possible to expect that any have really recovered. Treament is disappointing.

Duodenal Ulcer.—This is comparatively frequent in Zanzibar, and no age, after the twentieth year, seems exempt from it. It is difficult to understand why it should be so much more common in Zanzibar than in the other parts of the East African Territories. One factor which may also have some influence on its incidence is hookworm infestation, as some cases of advanced ancylostomiasis, which were investigated in the hospital, showed a hyperacidity highly suggestive of duodenal ulcer; but the blood condition improved, following treatment for hookworm and the hyperacidity decreased. Those cases of ancylostomiasis which were investigated were all advanced cases and complained of pyloric pain, but X-ray examination showed no evidence of duodenal ulceration. It is not easy to tell when hyperacidity does appear, if it really does follow on infestation with the hookworm. The cases investigated were few in number and not enough to draw conclusions from, but it is suggestive that all examined did show it. It is a subject which is well worthy of further investigation.

The treatment for duodenal ulcer adopted in the hospital has very largely been surgical. Even if patients were kept on diet while in hospital, undesirable articles of food are usually smuggled in which defeat the object of hospitalization. Further, once they are discharged they at once revert to their old customs and so any good which may have been attained is soon neutralized. For the same reason the operation of posterior no-loop gastro enterostomy has been abandoned and a physiological gastrectomy is being done as a routine unless the presence of adhesions makes it much too severe. The ultimate results so obtained are very much more satisfactory.

Avitaminosis.—This is very common, the main sufferers appear to be the people living in the villages. Those admitted to hospital practically all show evidence of vitamin B deficiency in the form of polyneuritis; the lower extremities are more frequently affected but in some cases the upper suffer as well. Often the initial symptom the patient complains of is inability to pick things up. A fully developed polyneuritis shows itself by the patients being unable to walk, or, if they walk they walk with their feet splayed out and with an ataxic gait. In bed they can move their limbs easily and comfortably, sensation is unaltered and there is no alteration in the visceral reflexes, although the knee and ankle jerks are often abolished. When the upper extremities are involved the grip is weakened. The cardio-vascular system does not seem to be much involved in this type of avitaminosis. Recovery is very slow but eventually is complete and the reflexes are always the last to appear. An interesting feature in these cases is that, though often they have to lie on their back for months on end, it is only exceptionally they develop bed sores. Some cases show a positive Kahn and in such patients intensive intravenous therapy helps the recovery period considerably; on the other hand the treatment of other intercurrent infections as malaria and hookworm does not seem to have any effect on the progress of the polyneuritis.

II. COMMUNICABLE DISEASES.

(*a*) Mosquito or Insect-Borne.

In Section III an account is given of malaria. There is nothing new to report as regards filariasis, blackwater fever or any other insect-borne disease.

(*b*) Infectious Diseases.

There were no serious outbreaks during the year and only 20 cases of typhoid were seen. There were less cases of dysentery of all sorts than usual and fewer cases of measles, whooping cough and influenza.

Gonorrhœa and Syphilis.—(*a*) *Syphilis.*—Two interesting conditions are often seen and have come to be recognized as of syphilitic origin:

(a) Patients are often admitted complaining of intense headaches without any other physical signs. The blood in some cases, and in others the cerebrospinal fluid, gives a positive Kahn. Within the first few days of anti-syphilitic treatment the headache goes away completely. These are probably cases of a syphilitic cerebral meningitis of a plastic type.

(b) The other series consists of patients complaining of pains in the lower extremities and of difficulty in walking. The legs are spastic, the reflexes are very greatly increased and ankle clonus in present. The blood and cerebrospinal fluid may or may not be positive. The sensory reactions are undisturbed. These cases react favourably to specific treatment but not with the same dramatic suddenness as those above. They are probably cases of a syphilitic spinal meningitis or of a gumma.

(*b*) *Gonorrhœa.*—Still remains as widespread as ever. A few cases have been treated with *uleron* with encouraging results. The discharge seems to stop fairly quickly, but whether such a stoppage is temporary or complete it is not yet possible to say.

In females, a constant complaint is that of menorrhagia. Extensive examinations have been made in these cases to try and discover the cause, but none has been ascertained, and it is quite possible that such cases are due to gonorrhœa.

(*c*) Helminthic Diseases.

Ancylostomiasis.—There were 11,340 cases in 1938 as compared with 12,196 cases in 1937. A full report of this disease will be found in Section III.

Schistosomiasis.—There were 431 cases in 1938 as compared with 576 cases in 1937. A full report of this disease will be found in Section III.

(B) VITAL STATISTICS.

I. POPULATION.

During the year 3,441 births were registered and 5,040 deaths. There were 17,076 immigrants and 17,114 emigrants.

There was therefore an excess of deaths over births of 1,599 and of emigrants over immigrants of 38—a net loss of 1,637. The population at the end of the year should be that at the end of 1937, 243,135 less 1,637 = a total of 241,498.

Mid year.	Estimated population.	Birth Rate.	Death Rate.
1934	244,000	18.3	17.6
1935	243,500	14.9	16.6
1936	242,770	16.3	16.8
1937	243,135	17.0	16.9
1938	241,498	14.1	20.9

Birth and Death Rates.—In every past report it has been pointed out that all the returns on which these rates are based are unreliable and it is questionable if it is worth recording them.

Infantile Mortality Rates, Maternal Mortality and Still Birth Rates.—There is no reliable data on which to base more than an estimate of these rates.

Infantile Mortality Rates :—Probably more than 275 per 1,000 live births.

Maternal Mortality Rates :—Probably more than 9.2 per 1,000 live births.

Still Birth Rates :—Probably more than 5% and less than 9%.

II. EUROPEAN OFFICIALS.

The officials included in Table A and B below are those whose names appear in the Protectorate Staff list only. Wives and families are not included.

TABLE A.

Showing the sick, invaliding and death rates of European officials during the last three years :—

	1936	1937	1938
Total number of officials resident ...	102	110	103
Average number resident ...	69.51	69.60	79.73
Total number on sick list ...	151	159	166
Total number of days on sick list ...	981	709	684
Average daily number on sick list ...	2.68	1.94	1.87
Percentage daily of sick to average number resident ...	3.85	2.61	2.34
Average number of days on sick list for each patient ...	6.49	4.46	4.12
Average sick time to each resident ...	9.62	6.44	6.64
Total number invalided ...	—	—	—
Percentage of invalided to total residents ...	—	—	—
Total deaths ...	2	1	—
Percentage of deaths to total residents ..	1.96	0.9	—
Percentage of deaths to average number residents ...	2.88	1.44	—

The most common diseases were :—

Local injuries ...	20
Diseases of the digestive system ...	19
Influenza ...	19
Malaria ...	18

Three Medical Boards were held on European officials during the year for the following causes :—

Debility ...	1
Acute Pyelitis ...	1
Neurasthenia ...	1

Deaths.—No death occurred during the year.

III. EUROPEAN NON-OFFICIALS.

166 European non-officials reported at Government hospitals as compared with 178 for the previous year.

The principal causes of sickness were :—

Diseases of the digestive system ...	25
Diseases of the skin ...	16
Local injuries ...	14
Influenza ...	12

Deaths.—Two European non-officials died during the year.

Cerebral Hæmorrhage ...	1
Septicæmia ...	1

IV. NON-EUROPEAN OFFICIALS.

Table B.

The following table shows the sick, invaliding and death rates of non-European officials during the past three years:—

	1936	1937	1938
Total number of officials resident ...	475	462	513
Average number resident ...	430.73	423.48	466.58
Total number on sick list ...	268	264	332
Total number of days on sick list ...	2,456	1,753	2,204
Average daily number on sick list ...	6.71	4.80	6.04
Percentage daily of sick to average number resident ...	1.55	1.13	1.29
Average number of days on sick list for each patient ...	9.16	6.64	6.64
Average sick time to each resident ...	5.17	3.79	4.29
Total number invalided ..	5	5	4
Percentage of invalided to total residents ...	1.05	1.07	0.78
Total deaths ...	—	—	4
Percentage of deaths to total residents ...	—	—	0.78
Percentage of deaths to average number residents ...	—	—	0.08

The most common diseases were:—

Influenza ...	128
Malaria ...	87
Diseases of the respiratory system ...	38
Diseases of the digestive system ...	28

Medical Boards were held on seven Asiatic officials of whom four were permanently invalided for the following causes:—

Debility ...	2
Hemiplegia ...	1
Pulmonary Tuberculosis ...	1

Deaths.—Four deaths occurred during the year.

Pneumonia ...	2
Jaundice ...	1
Pyelophlebitis ...	1

SECTION III.

HYGIENE AND SANITATION.

A. GENERAL REVIEW OF WORK DONE AND PROGRESS MADE.

I. PREVENTIVE MEASURES.

(*a*) Mosquito and Insect-Borne Diseases.

Malaria.—The report on the malaria survey of the Protectorate by the Malaria Research Officer was not presented till the end of the year, and comment is reserved for a future report.

In Zanzibar town with its population of 47,000 the following measures have been undertaken during the last four years to reduce the incidence of malaria and the prevalence of mosquitoes generally.

(i) Some 1,500 head of cattle, formerly housed in the town and allowed to grass all over it, were moved into the country during 1936. According to the Malaria Research Officer their hoof prints had been responsible for some 66% of the anopheline breeding places found in the town.

(ii) Quarrying for rock and spoil in all townships was made an offence in 1935, and town rubbish has been used systematically since then to fill in all old quarries, low lying and water logged land. Approximately 80 tons of refuse a day are disposed of in this way and the worst of the old quarries are being gradually filled in and have ceased to be breeding places.

(iii) The piped water supply has been extended very greatly throughout the town since 1935 and in consequence it has been possible to fill in all but a few shallow wells in the township. These wells used to breed A. funestus in myriads in the past and could not be oiled as the water was needed for drinking, and "millions" fish could not be kept in them as small boys caught and ate them. Such wells as have been left have been fitted with a cement surround and a pump and cannot cause mosquito breeding.

(iv) Anti-malarial control measures were extended for half a mile outside the town boundary in 1937. This takes in most of the swamps and ponds near the town which form the reservoirs from which anophelines invade the town during the rains. Owing to the strong winds blowing during the wet weather anophelines tend to be carried from the main portion of the island to the peninsula where the town is situated; it has so far proved too expensive to enforce control measures over the two or three miles from the town boundary which would be necessary before this could be stopped.

(v) Routine anti-malarial control by cleaning of land, oiling, filling, draining, etc., goes on all over the town area every day and, in order to reduce the numbers of culicine and stegomyia mosquitoes, each one of the 11,000 houses in the town is inspected once a week. All trees and plants are looked over and holes in trees filled in and plants capable of retaining water are rooted up. During the year the following places were found in which there were larvæ.

In the township.

Culicine	Stegomyia	Anopheline
269	3,993	19

In the half mile controlled strip outside the town boundary.

Culicine	Stegomyia	Anopheline
324	280	168

(vi) All swamps, streams, ravines, ponds, storm water drains, sullage pits, cesspits and so forth are dealt with every week and each year a little more permanent drainage work is done. At the moment about 3½ miles of stream are graded and supervised, 125 acres of swamp inspected and 5,390 yards of anti-malarial drains kept up.

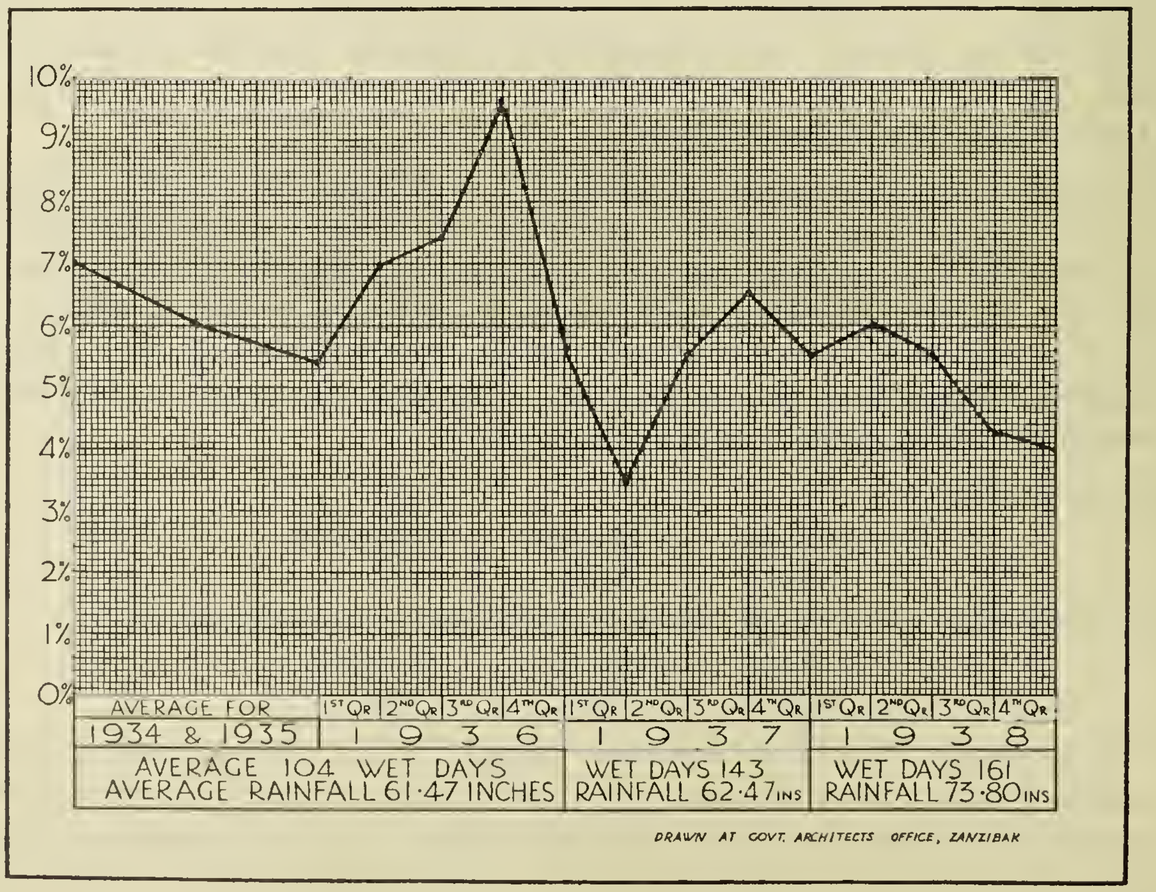
The control of the culicine and stegomyia mosquitoes is the hardest problem. In the absence of sewers and drains about 8,000 huts and houses dispose of their faeces and urine into cess pits. Zanzibar is low lying, and the water table high, so that when it rains the water table rises and dilutes the sewage in these cess pits and sullage pits and culicines can breed. At the same time stegomyia mosquito breed in all domestic receptacles used to store water in huts and also in holes in trees. It is fortunate that only in some 200 huts that this flooding of cess pits happens to any great extent and, generally it happens only when the rainy season is unduly prolonged, as in 1938, when there were 161 wet days as compared with an average of 143 for the period 1892-1936. .Under these circumstances the water cannot get away and stays sufficiently long in the pits to cause breeding on a large scale. Unfortunately this breeding time coincides with the change in the monsoon from the south to the north and then blows from the cess pitted area over the "stone town" and carries mosquitoes with it. This cannot be avoided as the cess pits cannot be oiled as this stops the "action" and they fill up and the resultant nuisance is insupportable. The remedy is to extend the sewage system, but the cost is prohibitive. Systematic thinning of bush and trees to prevent harbouring of mosquitoes has been in force for years, and will be extended. Individual householders should be able to do much to rid themselves of mosquitoes by daily and systematic hand catching because, as none of the houses in the town are protected by netting a few mosquitoes get into them each night and mount up in numbers. Incidentally, as a reflection on the civic conscience of the more prosperous sections of the community, more culicine and stegomyia larvae are found proportionately in the houses of the more well-to-do Arabs and Indians than in the poorer quarters of the town.

The results achieved by the various measures detailed above are as follows. The concentration of female anophelines per house in a periphero central direction during the wet seasons has been :—

1934	(uncontrolled)	4.00	3.00	2.00
1935	controlled	1.00	0.05	0.03
1937	controlled & half mile outside	0.40	0.03	0.03

The difference between the results produced by two female anophelines per house, as in the past, and three per hundred houses, as at present, is reflected in the following graph.

PERCENTAGE OF CASES OF MALARIA TO ALL DISEASES TREATED AT ZANZIBAR HOSPITAL.



DRAWN AT GOVT. ARCHITECTS OFFICE, ZANZIBAR

Six control premises are kept under observation daily throughout the year and the results of adult catches in the past three years have been:

	Anopheline.	Culicine.	Stegomyia.	Rainfall in inches.
1936	20	1,684	175	76.45
1937	12	1,361	170	62.47
1938	4	1,419	120	73.80

These are interesting because they show that where control can be exercised —over anopheline and stegomyia breeding places—the numbers of adults tend to decrease. The numbers of culicines, whose breeding places cannot be efficiently controlled, keep up to the same high level.

PEMBA.

Malaria is the disease most urgently requiring preventive measures in Pemba.

As in previous years oiling, filling and clearing have been carried on and—in the three Pemba townships—a total of 8,510 linear yards of concrete, and 7,214 yards of earth drains have been cleared and maintained. Inspections and oilings of sullage pits and latrines have been carried out regularly.

New anti-malarial works have been completed in Wete and Chake Chake during the year, but it was considered that the township of Mkoani was too small and its anopheline breeding grounds too extensive to warrant extra expenditure and labour there, as the necessary skilled supervision was difficult to provide.

NEW MEASURES INSTITUTED FOR ANOPHELINE CONTROL IN WETE.

Selem swamp was the most prolific breeding place for *A. costalis* and *A. funestus* so that a main central drain, 2,607 feet long, was dug in such a way as to make it easily replaced piecemeal by concrete inverts at some future date. Running into this, and also directly into the tidal creek, contour and herring bone drains were dug for a length of 3,865 feet. 2,000 feet of the latter were laid with agricultural pipes in stone, some filling was added, and a shallow surface drain left above to remove storm water. The bed of the old stream which percolated the swamp was filled in, where it was not utilized for constructing the drains.

Seeds and seedlings of Eucalyptus and Cassia were planted towards the mouth of the swamp and approximately 50 are thriving.

These measures allowed the swamp to dry completely in 12 hours after cessation of the heaviest rain.

Breeding of mosquitoes has been completely abolished in this area, and two men can now clear the drains and keep them in repair.

It was discovered that breeding occurred in pools among the mangroves at the tidal end of the market swamp, so that 783 feet of centre and herring bone drains were constructed in this area.

At the opposite end of this marsh, i.e. near the market, controlled tipping of refuse is now taking place and will raise the level in time.

A small but troublesome swamp existed behind the court and the whole of its floor has been hoed out and the grass removed with the idea of making three golf fairways on the site. It is proposed to dig two contour drains in 1939 and then this swamp should cause no future trouble.

The large swamp behind the water works is partially drained by a stream and during 1938 about two-thirds of its length has been cleared and canalized.

The thick belt of trees, offering shade and harbourage to mosquitoes behind the Wete hospital and staff quarters, has been broken by felling over 50 diseased clove and other trees. The ground has been cleared and it is intended to plant flowering shrubs in place of the trees.

In previous years it was rare for an European in Wete to escape malaria and many had more than one attack. During 1938 it has been exceptional for a European to contract the disease except following a safari, and the subordinate officials for the first time show almost a clean malarial sheet for their children.

It is difficult to estimate the effect of anti-malarial measures on the native population but the Wete girls' school revealed a fall from 78% to 50% in the spleen rate since the inspection in 1937.

CHAKE CHAKE.

This township is as malarious as Wete but offers a much more formidable proposition in preventive medicine. The surrounding swamps are much larger and the levels more difficult for drain construction. The most important breeding area, known as the Tibirizi Swamp, is close to the European quarters. It surrounds the whole western half of the town, is about 939 feet wide and has a very low lying mouth which would be tidal but for the sluice gates which control the influx of the tide. The gates are maintained to preserve rice growing areas in the swamp.

It was decided that all funds for permanent anti-malarial work in Pemba were to be devoted to this swamp and 189 feet of concrete invert (3′ 8″ across) were installed to replace an old earth drain.

At an angle to this a wide canal, 1,987 feet long by 6 feet across, was struck diagonally to the west and now drains off an enormous quantity of water. Much of the ground has been cleared and some hoed up. 1,272 feet of additional herring bone drains have been dug.

LARVAL COLLECTIONS.

	Anopheles.	Culex.	Stegomyia.	Totals.
Wete ...	67	209	241	517
Chake Chake ...	19	55	138	212
Mkoani ...	27	85	7	119

(b) EPIDEMIC DISEASES.

No cases of Plague, Smallpox, Cholera, Relapsing Fever or Cerebro-Spinal Meningitis occurred during the year. The incidence of Leprosy is discussed in Section VII (E and F) of this report. 8,301 rats were caught during the year and 881 were examined for plague with negative results.

Enteric Fever.—20 cases were notified of which 19 were in Zanzibar town, this is rather less than usual. Each case was investigated and in one instance a carrier was found to have been responsible for seven cases. He responded to treatment. Cases of enteric are surprisingly few when the congested state of the town is considered, and the inadequate and shallow pit latrines which have to be used in the absence of a water borne sewage system. The usual practice of carrying water in receptacles, of doubtful cleanliness, by professional water carriers, must cause some cases of enteric and the remedy is, of course, more stand pipes and more water laid on to houses.

Dysentery.—36 cases were notified. This is less than usual. There were no serious outbreaks, all the cases being sporadic.

Tuberculosis.—115 new cases were seen as compared with 151 and 204 during the past two years; but there is no evidence that tuberculosis is diminishing in the town. Rather the contrary appears to be the case as there are many cases of the disease not notified, and not under treatment, which are encountered by the Medical Officer of Health and Sanitary Inspectors on their rounds. It is the poorer class Indians and Arabs who suffer chiefly from tuberculosis, both in Pemba and Zanzibar, and there is no doubt their tolerance of dark and overcrowded dwellings is the cause of the spread of the disease coupled, of course, with systematic under feeding. As slum conditions are gradually cleared up—and it will take many years of effort to clear up the Zanzibar slums, unless large sums of money could be made available—it is to be expected that fewer cases of tuberculosis will occur. In any case there is no evidence of a spread of the disease or that it is really a serious problem in the Protectorate.

(*c*) HELMINTHIC DISEASES.

Ancylostomiasis.—In the annual report for 1937 it was explained that the incidence of ancylostomiasis was about 98% throughout the Protectorate and about 9% of the people showed clinical signs of the disease. This infestation although producing definite clincal signs attributable to the worms in only 9% of the cases, also affects adversely the health of the people suffering from other intercurrent disease in that a person debilitated by ancylostomes is affected more seriously than would otherwise be the case.

A sum of £800 was allocated for experimental anti-ancylostome work during 1938. It was spent in the provision of 3,413 cement latrine tops at an average cost of Shs. 2-64 each; in making cheap boring machines for digging pit latrines; and in paying labour. It was intended that each hut, or group of huts in a selected area, should have a latrine dug and fitted, with a cement cover free. The hut owner, it was thought, would provide a weather proof shelter, so designed as to admit plenty of light and air.

Three African Sanitary Inspectors were in charge of the work. Until April they toured their areas on foot addressing individuals and groups of people on the subject of hookworm as opportunity served. Few people expressed the least interest and a few were actively hostile to the new ideas. Prevailing public opinion was suspicious of receiving something for nothing and the belief was prevalent that Government intended to impose a hut tax or something worse to reimburse itself for the expenditure. This belief held up progress to a very large extent and was very difficult to eradicate, and indeed many natives deliberately refrained from building shelters over their pit latrines because they thought that the moment they did so they would be liable to pay tax!

However the tax idea was not the only difficulty encountered. Men could not be obtained for work in rural areas, as they were either picking cloves for three months or busy spending the proceeds of their labour. In addition the "short" rains set in with unusual severity and latrine boring had to be stopped for several weeks at a time when the country was flooded.

Other minor difficulties included sandy soil which collapsed into the pits and had to be revetted with locally made baskets; sub-soil water caused some pits to fall in as a result of the washing out of a cavern at the base of the pit, and the presence of coral rock.

However, by December 2,705 latrines had been bored, but of these only 600 had shelters erected over them and were in use. A vigorous drive was started towards the end of December to have all pits provided with shelters and the aid of the Provincial Administration was invoked with very satisfactory results. Nevertheless three months will have to be spent getting shelters erected over old pits. In 1939 the system will be adopted that immediately a pit is dug it will be provided with a shelter and brought into use.

Although the 1938 experiment has been only a qualified success it has paved the way for easier work in 1939. People are getting used to the Sanitary Inspectors and do not object to using the latrines provided.

A full report of the experiment cannot be written till later in 1939, when the present reserve of cement slabs will have been put to use and work carried out in a more systematic fashion. There is no inherent difficulty in providing the whole population with latrines and, as there seems a reasonable certainty that they will use them, the degree of ancylostome infestation must diminish ultimately.

Ascariasis.—Is nearly as prevalent as ancylostomiasis and it is hoped the same measures will reduce its incidence.

Schistosomiasis.—The published report from the research worker on this disease from the London School of Tropical Medicine was not available by the end of the year. Before his departure he made oral recommendations that one lake harbouring Physopsis Globosa which he incriminated as the carrier, should be drained as an experiment. This was done at a cost of £70, and a well was dug to provide the local people with water in its place, at a cost of £50. By the end of the year the pond was drying well and the snails were gradually dying or were concentrated in the few puddles of water still left. By February it looks as if the pond should be dry and it will stay dry till the rains in April.

II. GENERAL MEASURES OF SANITATION.

(*a*) Sewage Disposal.

(*i*) *Zanzibar Stone Town—West of the Creek.*—This contains over 3,000 houses and this year 84 new septic tanks were installed.

The practice, universal five years ago, of discharging crude sewage on to the beach above high water level, or into the tidal creek has now ceased and there have been no cases of dysentery or typhoid attributable to this cause since.

The remainder of the town houses use cess pits and must continue to do so till funds permit of the public drains being extended.

Two more public latrines have been built, bringing the total for the town to twenty, of which 16 have been built during the last four years. Only one more is needed in this area.

(*ii*) *Zanzibar Native Town—East of the Creek.*—Pit latrines are generally used. These sometimes cause a nuisance by overcowing, so that owners are being gradually pursuaded to remove them from their kitchens and to put them in a separate hut in the compound. This takes time as there is not always space available for a compound.

Many public latrines are needed in the native town as the state of the sanitary lanes and side roads testify every morning. But till water and drains are laid none can be built as the usual forms of ''dry Texas'' latrines have been tried and have failed as they are apt to be disorganized by tidal water, or by the rapid percolation of water through the sandy soil which leaves the solids to fill up the pit.

(*iii*) *Rural Areas.*—Both in Zanzibar and Pemba sewage is not disposed of save in a very few instances, where a particularly hygienically minded person uses a pit latrine instead of the bush. This year a start has been made to provide all huts, or family groups, with pit latrines and by the end of the year 2,705 had been dug. Details of this work appear in Section III.

(*iv*) *Pemba Townships.*—There is little change to report. A new public latrine with a septic tank was built at Wete and three other pit latrines are maintained. It has not been possible to abolish entirely the bucket latrines in use at some houses, but it is hoped to replace them by flush closets or pit latrines. A new public pit latrine was built at Mkoani and at one village in the district Mtambili.

(*b*) Scavenging.

Scavenging was carried out efficiently during the year in Zanzibar and Pemba townships. There is nothing new to report and, in general, streets were kept reasonably clean.

(*c*) Refuse Disposal.

As in the past the 80 odd tons of refuse collected daily in Zanzibar were used, by controlled tipping, to fill in low-lying or swampy areas or to fill in old quarries. One quarry was completely filled and is in process of being turned into a sports ground.

In Pemba most of the refuse was used for filling swamps or other low-lying land.

In rural areas Sanitary Inspectors try to teach people to put their refuse in a pit and make compost of it for manuring their crops—but there is no immediate prospect of the people adopting this method. They do not mind the flies which breed out in the refuse and, naturally, do not believe that dysentery, enteritis and typhoid have any connexion with defaecating in the bush and the breeding out of flies in refuse. In time, as conditions improve in villages where latrines are dug, it may be possible to educate local opinion.

(*d*) DRAINAGE.

In Zanzibar 1,100 yards of new drains, actually small sewers, were laid and 84 houses installed with septic tanks, connected up with the public drains. No storm water drains were laid and no new anti-malarial work was done. All old permanent anti-malarial and other drains were kept in repair and temporary drains were graded and cleaned as necessary.

In Pemba no new permanent work was done but, as described under anti-malarial measures, in Section 111A, the District Medical Officer of Pemba carried out a good deal of very valuable temporary drainage work in Wete. The District Medical Officer also started drainage work in Chake Chake and 200 feet of concrete invert (3′ 8″ across) were laid to replace an old earth drain, and over 1,000 yards of new earth drains were dug.

(*e*) WATER SUPPLIES.

Where water mains have been laid in Zanzibar town the supply was excellent throughout the year and every test showed a high degree of bacteriological and chemical purity, except during one week. No filtering or chlorination is done except in emergencies and one did occur, as a result of a cloud burst breaking over both the springs from which the town supply is obtained. The immediate result was the washing of large quantities of sand and vegetable matter into the mains and bacteriological tests showed that both springs were contaminated with B coli in high dilutions. The Patterson Chloronome was turned on for seven days and .5 parts of chlorine per million were run into the mixing chamber and rendered the water sterile.

On several occasions in Wete heavy rains caused contamination of the springs from which the town supply is derived, so the catchment area has had to be refenced and some drains dug to intercept surface wash.

In Chake Chake the supply is always subject to suspicion and is always chlorinated, but throughout the year there was no especial trouble with it.

The Mkoani water supply is from a well on the beach and certain tanks and it is not satisfactory. A scheme has been got out for a piped water supply but it has not been possible to instal it yet.

(*f*) OFFENSIVE TRADES.

No serious trouble has been caused by offensive trades in any township during the year. The usual minor difficulties have occurred, fly breeding on copra drying floors, spillage on roads from cess pit emptier's carts, complaints about fumes from lime burners and a few protests about the smell from soap boilers' factories.

(*g*) CLEARING OF BUSH AND UNDERGROWTH.

Despite the removal of 1,500 cattle from Zanzibar town and the additional grass cutting which resulted, the routine work cost some £200 a year less than in the past. This was due to employing some prisoners—not a very satisfactory system except as an economy, as they do not work as hard as paid labourers. Grass had to be allowed to grow for longer periods than in other years, owing to the slow work of the prisoners, and this resulted in rather more fly breeding than usual in cut grass, fallen fruit and filth thrown into the long grass. This was made worse by the record length of the "short rains" which were very heavy. Nevertheless the fly nuisance was not serious and only lasted a few weeks and for the rest of the year Zanzibar was free of flies.

In Pemba the District Medical Officer was, as usual, in charge of grass and bush cutting in the station, and the work was as well done as it could be with the inevitable limitations imposed by insufficient labour. No increase was possible in the bush cutting votes for any of the three townships, although cattle were excluded from them all and this caused extra work, as did the unusually heavy rains. Much more money could be spent on each township with advantage.

(*h*) SANITARY INSPECTION.

Routine work was carried out in all townships and in Zanzibar, and it should be appreciated that the seven district Sanitary Inspectors in Zanzibar, and the two in Pemba, not only carry out the normal duties of Sanitary Inspectors but are responsible for work usually necessitating an entirely separate staff. They are in direct charge of all street cleaning, refuse removal and bush cutting—which is no sinecure as 80 tons or more of refuse are removed from Zanzibar town daily and 56 miles of streets and lanes are swept by hand. In Pemba some 15 tons of refuse are dealt with daily and the streets are all swept every day. In addition Sanitary Inspectors, during the past two years, have taken over most of the work of the Building Authority in Zanzibar town, where formerly one European Building Inspector with three Asiatic assistants were employed; now only one Asiatic assistant remains. In Pemba all the Building Authority work falls on the Sanitary Inspectors.

It may be said that the Sanitary Inspectors employed in Zanzibar and Pemba townships carried out their difficult and responsible work very efficiently. In addition to the town Inspectors one other is employed solely in connexion with harbour work—inspection of dhows and shipping and vaccination of immigrants and emigrants. Another deals with anti-malarial measures within and for half a mile outside the Zanzibar town boundary where his efforts and those of the Sanitary Inspectors in the town districts are reflected by the figures of anopheline infestation shown in Section III.

During the year three African rural Sanitary Inspectors were employed in the rural districts, one of whom passed the Royal Sanitary Institute Examination in 1937 and the other two hope to do so in 1939. They were posted in adjoining districts in the north-west part of the island and were engaged chiefly in the anti-ancylostome measures detailed in Section III. They also lectured in schools and addressed the evening gatherings of peasants in the markets on the question of hookworm and its method of spread, on malaria and dysentery and on the need for taking sick children to the Woman Medical Officer's clinics.

They confined themselves to a few subjects only and it is too early yet to say if their propaganda and distribution of pamphlets will produce any result. They have at least succeeded in imparting a knowledge of hookworm to several thousand people.

At first these three men were regarded with a good deal of suspicion by the more influential natives as they were new, and all new things are suspect in Zanzibar. But gradually people have got used to them and some now come for advice about wells and housing and illness. These three Sanitary Inspectors have the advantage of having been medical dispensers for some years, and so have an elementary knowledge of medicine and are able to deal with many of the minor ailments of villagers on the spot, thus increasing their popularity. A year's experience is too short a time, in Africa, to base any estimate on what these men will do, but it is safe to hope that they, and their successors now in training, may prove to be some of the more valuable men in the employment of the Protectorate.

Sanitary Inspectors were responsible for 130 prosecutions only during the year in all townships. Amongst the most common offence was breeding mosquitoes in houses for the second time after a warning notice had been served, failing to keep grass and bush cut after a notice had been served, and adulterating food.

III. SCHOOL HYGIENE.

Zanzibar and Pemba Schools.

A. Rural Schools.

631 pupils were examined in the Zanzibar rural schools and 197 in the Pemba schools during 1938. This represents an increase of 49 in the former and a decrease of 127 in the latter compared with the number of examinations made in 1937. The decrease in Pemba was due to the closing of Mkoani and Kengeja schools and a fall in attendance at Kiwani school.

In Zanzibar rural schools, the examination in 1938 differed from that of 1937 because the taking of blood for films and for the Kahn test was usually omitted owing to the suggestion that the activities of the medical department in this direction might be responsible for the diminishing attendance at the rural schools. Stools were not examined for ova of helminths as it is an established fact that a very high percentage of the rural population harbour the eggs of ancylostomes. Examinations of blood films for malarial parasites were carried out in all the Pemba schools and in three schools, totalling over 200 pupils, in the south of Zanzibar Island.

The following tables shows the percentages of the conditions found:—

	Zanzibar. %	Pemba. %
Nutrition		
Good ...	41	45
Fair ...	36	47
Poor ...	23	8
Cleanliness (excluding Makunduchi, Muyuni and Kizimkazi schools)		
Good ...	55	36
Fair ...	29	23
Poor ...	16	41
Vaccinated ...	78	77
Teeth requiring treatment ...	31	—
Nose and throat ,, ...	15	13
Eyes ,, ...	19	2
Ears ,, ...	2	3
Heart ,, ...	1	5
Lungs ,, ...	1	2
Spleen ,, ...	39	56
Avitaminosis ,, ...	31	3

Cleanliness.—In the majority of schools the cleanliness of the pupils was undoubtedly higher in 1938 than in previous years. Once again the value of personal example from the teachers must be stressed; where the standard set by the teachers is high, that amongst the boys will be as high as the financial means of their parents allow. In some schools the pupil's clothing, which often consists only of a ragged *kanzu*, is very dirty or appears to be so from prolonged use in spite of washing; parasitic skin diseases in such schools are extremely prevalent; an examination of three of the worst schools revealed the fact that lice were found on the clothing in 49%. Scabies occurred in 27% and tinea in 18.5% of these pupils. In many of the pupils two or more of these conditions co-existed and in a few cases impetigo contagiosa was also seen. The pupils of one of these schools resort to frequent sea bathing and in all schools soap is issued, but the prevention and permanent cure of these conditions is extremely difficult, and well nigh impossible under existing conditions owing to the fact that the majority of the boys sleep in the clothes which they are wearing during the day time and very few have a change of clothing. Furthermore, in the case of lice it seems reasonable to presume that the mud floors and probably the walls of the huts in which they live harbour the vermin.

Vaccination.—Marks of successful vaccination were present in 73% of the Zanzibar rural schools and 77% of the Pemba schools. In addition some pupils were unsuccessfully vaccinated. The majority of those unvaccinated were new pupils attending for their first medical examination. Unfortunately vaccination is still a most unpopular measure amongst the rural people, and the appearance of the vaccinator or dispenser is often followed by a stampede of the children who may then remain away from school for days; in this they are frequently encouraged and aided by their parents. In Pemba vaccinations were carried out amongst the pupils not previously vaccinated.

Teeth.—These are dealt with in a separate report by the Dental Surgeon. During the routine examinations of children in the Zanzibar rural schools, it was found that 31% required immediate dental treatment.

Nose and Throat.—Tonsillitis and evidence of pharyngeal inflammation were more common than in 1937. No reason is apparent for the increased incidence of these infections especially as the percentage of dirty mouths has decreased. Perhaps the fact that the examinations were in the majority of schools carried out during months when the temperature was unusually low for the Protectorate with a resultant increase in the large number of "colds" was the cause of the increased number of throat infections. In the three schools in the south of Zanzibar Island, chronic enlargement of the tonsils was found in 17% of the pupils examined.

Diseases of the Eye.—In the Zanzibar rural schools "avitaminosis", angular conjunctivitis, follicular conjunctivitis and trachoma were those mostly responsible for the abnormal eye conditions seen. Trachoma, as usual, was limited almost entirely to Arab boys; angular conjunctivitis was especially common in schools where the standard of nutrition was lowest.

Diseases of the Ear.—Apart from the presence of huge plugs of wax, which is practically universal, the few cases of ear disorders encountered were those of otitis media.

Diseases of the Heart.—No cases of organic disease were found amongst the Zanzibar rural school children, but hæmic bruits due to secondary anæmia resulting from ancylostomiasis, malaria, and possibly bilharziasis are responsible for the figures shown in the table; these are also included in the figures for Pemba.

Diseases of the Lung.—Only eight cases were encountered, viz. five of simple bronchitis, two of asthma and one with physical signs of recent pleurisy.

Splenic Enlargement.—In all the Zanzibar rural school children, a splenic rate of 39% was found. The Muyuni children, who live in a swampy area, showed a splenic rate of 75% with a parasitic index of undefined plasmodia of 10, examined by the thick film method. At Wete, in Pemba, as a result of the energetic anti-malarial measures taken around the township during 1938, the spleen rate fell from 78% in 1937 to 50% during 1938; all those spleens which were enlarged last year were found to be considerably smaller when examined this year.

Kahn Test.—These tests were carried out only on the pupils of Gulioni school, as at this school the parents of the children and the children themselves offered no objections to their blood being taken for the test. The result showed that 15% of the total had spirochaetal infections, a figure which closely corresponds to that of the country schools in 1936 (12%) before any treatment had been instituted. The ease with which the school was dealt with was due to the helpful assistance of the Head Teacher. No Kahn tests were carried out in Pemba schools.

Helminth Infestations.—Examinations of the stools and urine for these were only done in the schools in the south of Zanzibar Island, and in Pemba. It was found that 84% of children examined in Zanzibar schools harboured the eggs of one or more of the intestinal worms as follows:—Ancylostomiasis 27%, ascaris 56%, trichuris 28% strongyloides 1%. At Makinduchi school 84% of the children were found to harbour ascaris ova, and only two children out of 77 examined were free from helminthic infestation. The ancylostome rate amongst the general population in the areas where these schools are situated does not appear to be as high as in other parts of Zanzibar Island, probably owing to the dry nature of the soil which is largely coral and lime and sparsely shaded with trees and consequently not so suitable for the spread of the infection. It is likely, therefore, that most of the infections amongst the school children are picked up in the clove growing areas which nearly all of them visit during the clove picking season.

In Pemba 65% of the school children were infected with hookworm and 33.5% with other worms: the incidence of hookworm was particularly high amongst the Konde school children. At Wete girls' school most of the worm infections were trichuris.

Urinary Schistosomiasis was present in 32% of the Muyuni and 6% of the Makunduchi school children. No cases were detected at Kizimkazi. In the case of the Pemba schools 30% of the children were found to be infected.

Examination of Blood for Malaria.—In the three Zanzibar schools examined a parasitic rate of 12% was found, i.e. *P. vivax* 2%, *P. falciparum* 5% *P. malariae* 0.5% and undefined 4%. In Pemba the parasitic rate amongst the children was 51%.

Nutrition.—Considerably fewer cases of gross nutritional deficiencies are recorded from the Pemba rural schools than from Zanzibar. In the latter island it is not uncommon to find signs of avitaminosis amongst children who otherwise appear to be well nourished and in the south of the island the fact was revealed that 48 per cent of the boys examined showed Bitot's spots or other degrees of xerophthalmia.

B. REPORT ON ARAB GIRLS' SCHOOL, 1938.

	%
Nutrition	
Good	40
Fair	56
Poor	4
Cleanliness	
Good	75
Fair	22
Poor	3
Vaccinated	69
Nose and throat requiring treatment	31
Dental caries ,, ,,	29
Eyes ,, ,,	6
Ears ,, ,,	8
Heart ,, ,,	4
Lungs ,, ,,	1
Spleen ,, ,,	58
Anaemia ,, ,,	14
Blood parasites seen in	28
Hookworm and Ascaris found in	18

IV. HOUSING AND TOWN PLANNING.

A. URBAN HOUSING.

Zanzibar Town.

(*a*) *The "Stone Town"*.—This area has been described in past years and consists of over 3,000 houses and huts. Conditions have changed little during the year.

There are, however, a few advances to record. The survey of Government properties in 1937 led to most of the existing nuisances in them being abolished during 1938.

There have been during the year six applications to build new houses, 606 applications to alter houses and to repair houses, and in each case the Medical Authorities have been at pains to persuade the house owners to effect some improvements in ventilation, lighting and sanitation where it appeared necessary; in most cases there was no difficulty, except delay for financial reasons. Each year some 400 houses come under review in this way, apart from those which are dealt with on account of some sanitary nuisance existing on the premises, and steady, if very slow, improvement goes on.

219 house owners connected up to public drains during the year and abolished existing cess and sullage pits.

16 lodging houses were improved during 1938. This number is not large but about 15 to 20 are dealt with every year, and this year two very large properties housing some 400 people were entirely remodelled. What had been a couple of warrens, consisting of small dark rooms with no light or air and no kitchens and few latrines, have been converted into very attractive one and two-roomed flats, with flush closets available for every two or three flats and kitchen space in all. In marked contrast to previous years it is a pleasure to record the fact that quite a number of Indian property owners were willing to co-operate in improving living conditions for their tenants. Money is scarcer than in past years but there are a few people with money to invest who are putting it into good class houses, or improving poor properties, rather than speculating or investing elsewhere.

(*b*) *The Native Town.*—As Joint Building Authority the Medical Officer of Health dealt with 370 applications to build new huts, 1,841 to repair huts and 611 to rebuild old huts. Each year about 400 huts can therefore be realigned or re-sited in areas which are not congested. It is slow work as the unoccupied sites available for new huts are at present very restricted in number, but this yearly effort is showing some results and roads and tracks are slowly being carved out of chaotic collections of huts and light and air admitted.

(*c*) *Pemba Townships.*—Some attempt was made to improve housing and, in Wete, to lay out two new sites as hutting areas. The layout was arranged and some huts were partially built but, so far, the scheme has not been very extensively carried out. In Wete 67 new huts were built and 113 other applications to repair, improve or add to huts were dealt with. Every opportunity was taken to improve sites and roads and to increase light and ventilation, when new huts were built or improved.

Little was done at Chake Chake as the configuration of the ground—a series knife ridges—makes it practically impossible to carry out any serious town planning. Certain properties were improved, 55 new huts were built, and 154 applications to repair or improve huts were considered; 28 stone houses were improved.

In Mkoani—a very small place—few changes were apparent during the year and only three new huts were built and 28 improved or re-built.

B. RURAL HOUSING.

In past years detailed descriptions have been given of rural housing conditions which are reasonably good. The chief defect in all rural houses is the absence of any type of latrine. In Section IIIA it is explained how this matter is being dealt with and it is hoped, in time, that every house in Pemba and Zanzibar will be provided with a latrine. No other structural innovations are contemplated as the usual Swahili rural hut is well built, cool and well ventilated. Individual cases come to the notice of Sanitary Inspectors where light and ventillation are inadequate, and they are dealt with. Advice is given by the rural Sanitary Inspectors regarding the siting of houses away from swamps and in the best available places.

V. FOOD IN RELATION TO HEALTH AND DISEASES.

A. School Children.—(1) The policy of providing free meals for the children of a limited number of schools was adopted by Government. The Social Welfare Co-ordination Committee advised that the meal should consist of milk as at present the difficulties of cooking and preparing food under the conditions existing at rural schools were insurmountable, though it was considered that a more substantial meal might be provided in the future. The fresh milk offered under contract was at twenty-five shilling cents a pint, and this price was considered to be uneconomical. Negotiations with local agents and through the Crown Agents for the Colonies resulted—towards the end of the year—in orders being placed to the value of £100 for a full cream milk of Dutch origin dried by the spray process. Landed in Zanzibar, the cost of liquid milk reconstructed from this article is expected to come to between ten and eleven cents a pint. Consignments had not arrived in time for the milk to be distributed by the end of the year.

(2) The Committee also considered the question of rural school gardens, which had been used mainly for purposes of instruction of the children in raising food crops. It was considered that the raising of these crops, which necessitated in many cases the carriage of water from long distances by the children, threw too great a strain upon them in comparison with the benefits likely to accrue, and it was recommended that this procedure should be abandoned and that the gardens and the children's available time and energy should be devoted to the growing of fruit. It was also recommended that the fruit grown should be issued to and consumed by the children. The fruits chosen were citrus, paw-paws, tomatoes and pineapples, the growing of which would not throw an undue strain on the energy and time of the children and which, coming to fruition in seasonal rotation as they do, would supply the children throughout the year with a valuable dietetic factor of which they are in need. The recommendations of the Committee were accepted by Government, and their proposals are now being implemented.

(3) In certain schools it was the custom—in pursuit of the policy of giving an agricultural bias to the education afforded—for the children to maintain and manage a small chicken club, these have not, however, proved successful.

B. Red Palm Oil.—The outstanding vitamin deficiency clinically demonstrable amongst the native population is that of vitamin A. Food stuffs containing adequate supplies of this vitamin can be grown locally and are in certain cases commonly eaten, but presumably in insufficient quantities. In the case of such articles as spinach, sweet potato tops and other green vegetables, the method of preparation is probably at fault. Some fruits rich in this vitamin, such as mangoes, are strictly seasonal whilst others, such as tomatoes do not appear to be regularly available; whilst in the case of sweet potatoes, which are fairly extensively grown and consumed, the yellow fleshed variety, which is the only variety rich in this factor, is not readily available. The need, however, for some common food stuff rich in this factor is universal. In recent years a firm in Tanganyika Territory has put on the market a locally grown and prepared pericarp oil rich in vitamin A. At first the oil was liable to develop free fatty acids in amounts which rendered it unpalatable, but recently this defect has to some extent been overcome. Thanks to the generosity of the firm in supplying free samples of the improved oil for trial, it has been possible to test its popularity as a food stuff on a limited scale. The only way the oil could be used generally would be as a frying fat in place of ghee and ghee substitutes including "vegetable ghee", and hydrogenated fish or whale oil. The cheapest of these is the last, and red palm oil at current prices is half as cheap again. Trial of popularity has been made by issuing quantities of the oil free to eating house keepers in the town and the results have been that whilst no enthusiasm has been shown for the articles by the clients, it has been tolerated and eaten. Provided that its use does not drive away custom, it will be popular with the eating house keepers on account of its cheapness, and there are, in consequence, hopes that it may be possible to popularize it in the town. In the country it would have to replace the emulsion domestically prepared from the meat of the fresh coconut which is the universal source of fat amongst the peasantry, and there does not appear much hope of this replacement being brought about, as coconuts can always be obtained for little or nothing. The Agricultural Department are experimenting with the growth of the palm locally, and if eventually it were commonly grown and kernels were generally and cheaply available for the preparation of the pericarp oil domestically, it might in time replace the coconut. Meanwhile the purchased red oil has been introduced into the prison dietary to replace ghee. The principal result to be anticipated is economical, as the prison diet already provides a sufficiency of vitamin A.

C. Food Crops.—Consideration has been given by the Agricultural Department to recommendations made with regard to food crops such as maize and sweet potatoes, and experiments in the introduction of suitable strains are now being undertaken. Much consideration has also been given to the question of rice and cassava, and to what extent their local growth should be encouraged by improvement of strains and other means.

D. Nutritional Problems.—The visit paid to Zanzibar by Dr. Platt on his way to Nyasaland, where he is leading a team undertaking comprehensive investigations into nutritional problems there, was productive of much valuable discussion and great assistance was gained from his advice on the many problems presented to him.

WHOLESOMENESS OF FOOD.

Food Examined and Destroyed during 1938.

	lbs.
Vegetables ...	57,750
Fruit ...	19,500
Grapes ...	200
Onions ...	2,550
Garlic ...	1,792
Pigeon Peas ...	72,400
Fish (wet) ...	10
Fish (dry) ...	320
Beef ...	454
Mutton ...	1,205
Vermicelli ...	7
Mtama ...	210
Dhall ...	1,600
Tamarind ...	490
Cassava (dried) ...	100
Boneless Ham (9 tins) ...	71
Apricots (12 tins) ...	24
Pears (1 tin) ...	1
Pineapple (6 tins) ...	6
Herrings (3 tins) ...	1½
Salmon (6 tins) ...	1½
Milk (25 cases) ...	263

B. MEASURES TAKEN TO SPREAD THE KNOWLEDGE OF HYGIENE AND SANITATION.

In Schools.—Lectures and demonstrations were given regularly during the year in rural schools by Sanitary Inspectors and hygiene is included in the curriculum of all schools.

In Section IIIA a description of what has been done to improve school dietaries is given.

By Propaganda.—More propaganda on the subject of hygiene and sanitation in general, and the eradication of hookworm in particular, took place in Zanzibar island this year than has ever been attempted in the past. It was possible to keep three African Sanitary Inspectors in the field all the year. From January to April, before starting active anti-hookworm measures, they walked around their areas and delivered lectures and personal addresses to many thousands of people.

As a result of these efforts, assisted helpfully by the Provincial Administration towards the end of the year, it is at least certain that in these areas some 16,000 people have heard of hookworm and a great many of them know its cause and are aware of its effects.

Talks were also given on malaria, the proper disposal of refuse to reduce fly breeding and, in certain areas, how to improve water supplies. Better feeding was touched on and efforts made to stimulate women and children to attend the periodical clinics held by the woman doctor at various dispensaries.

But there is no doubt all this effort can be made to produce valuable results. All sustained effort, where Africans are concerned, has a slowly cumulative effect; nothing gets done in a hurry but over a long period the prevailing inertia tends to be overcome. The tendency is centrifugal and as more Sanitary Inspectors are put into the district the efforts they will have to put forth should produce more results than those of the first in the field, who have had so much hostility and apathy to combat.

In towns propaganda has proceeded, as in the past, by force of example. Better houses are built because other people build them and they, in turn, have copied folk who were probably forced to improve conditions in the first instance. Hygiene has reached a fairly high standard in the towns.

By Exhibitions.—None were held during the year as there were no funds. The view of most experienced Medical Officers and Administrative Officers is that in Zanzibar they are largely a waste of time.

C. TRAINING OF SANITARY PERSONNEL.

The five Sanitary Inspectors who passed the Royal Sanitary Institute's Examination in Zanzibar last year were given certificates by the new Joint East African Board for Sanitary Inspectors. The value of these certificates is appreciated and the teaching which has enabled them to be obtained has borne considerable fruit in the shape of better, and more intelligent, work on the part of those who took the course.

As a result of representations made after the 1936 examination the Joint Board have issued a syllabus more likely to accord with local requirements than the one formerly in use. But it is probable, after the training of the next batch of Sanitary Inspectors is completed, that further suggestions will be put forward as it has been found in the course of training that the inclusion of a little biology, some chemistry, physics and elementary survey work is likely to produce an even more valuable Sanitary Inspector than has yet appeared.

In 1938 ten new learner Sanitary Inspectors were engaged and started their training for ultimate employment in rural districts in accordance with the syllabus. Two were discharged at the end of the year but the eight remaining appear likely to be able to take the Joint Board's Examination in December, 1939. Amongst the eight, three are Africans of whom two were dispensers, one is a Goan, two are Indians and two are Arabs; all except the two ex-dispensers have attained to the level of the secondary school leaving certificate or its equivalent. They are keen young men and if properly handled during their early years, and made to work seriously, they may be expected to be real assets to the Protectorate.

Rural Dispensers and Hospital Probationers.—Only sufficient training in rule of thumb methods was given during the year to fill vacancies, and to rub up the work of the older men. The idea is not to engage or train more new men than necessary of this type, as it is hoped their places will be taken in a few years by native attendants who have received adequate training in hospital. Six men and six girls started training as hospital orderlies and nurses during the year in advance of the inauguration of the main training scheme referred to in previous reports. Their training was not systematic and no arrangements have been made for a second class in 1939.

General.—As in past years all sorts of Health Office employees, carpenters, motor drivers, sweepers and headmen have been encouraged to "better themselves" by attendance at a night school. Many have attended regularly and become literate and a few are learning English. All promotion in the Public Health Department is from the ranks, using these self educated men, to headmen, mosquito searchers and other responsible jobs carrying extra pay.

SECTION IV.

PORT HEALTH WORK AND ADMINISTRATION.

During the year 622 ships and 2,656 dhows visited Zanzibar as compared with 589 ships and 1,712 dhows in 1937. 17,076 immigrants landed and 16,895 emigrants left.

386 aeroplanes arrived and 386 left. 294 immigrants arrived and 219 emigrants left Zanzibar by aeroplane.

The usual system of automatic pratique was carried on throughout the year with very satisfactory results. The Shipping Companies and ship's masters have got used to this system whereby no medical inspection of passengers takes place at Zanzibar, provided that pratique has been given within the previous 48 hours at some other East African port and no case of infectious disease had developed in the interval.

Vaccinations of all immigrants is performed—except those showing a recent scar—and 3,327 vaccinations were carried out on ships and dhows.

Two ships were claytonized during the year and one certificate of freedom from rodents was issued.

Quarantine Island.—The East African quarantine station was maintained throughout the year and it is capable of being used, as in the past, for the accommodation of 1,500 to 2,000 people. Extensive repairs and renovations were carried out and the buildings are now in first class condition. Most of the stores held on Quarantine Island—those easily replaceable by local purchase—were taken into general use during the year as it was found that they deteriorated if kept on the island for any length of time.

SECTION V.

WOMEN'S CLINICS AND MATERNITY AND CHILD WELFARE.

Zanzibar.—The total attendances of women and children during the year 1938 showed a decrease as compared with the figures for 1937. This drop is mainly accounted for by the fact that the female clinic was still a new thing in 1937, and was attended by many women out of curiosity, and because the Woman Medical Officer to whom the people were accustomed went on leave during 1938 and no relief was available for over a month.

	1937.	1938.
Number of new cases ...	7,310	5,245
Total attendances ...	43,306	38,038

The incidence of disease in order of frequency was:—

Malaria.
Ancylostomiasis.
Dental caries.
Respiratory diseases.
Venereal diseases.
Gynæcological conditions.
Skin infections.

139 minor operations were done during the year.

Ante-Natal Clinic.—There were 109 new cases and 784 repetitions. Of the 109 new cases 36 women were delivered in hospital.

An analysis of the 36 deliveries shows:—

23 normal deliveries with two stillbirths.
4 forceps deliveries with one stillbirth.
3 eclampsias with two maternal deaths.
3 emergencies with one maternal death.
1 abortion.
1 miscarriage.
1 toxaemia of pregnancy.

The aim of the clinic, the regular supervision of women referred to it by the local midwives and the general women's clinic, with the provision of hospital treatment when necessary, has not yet been fully realized. The great majority of the ante-natal cases are drawn from the general clinics and very few from the midwives' practices.

Infant Welfare Clinic.—Two weekly clinics are held of which one is reserved for the children of subordinate officials. Total attendances were 2,908.

The number of healthy children attending for supervision is gradually increasing. This is a very encouraging sign as the tendency is to leave children till they are desperately ill before seeking advice. As a result of instruction given the children are brought up clean, in the main, and well cared for; this is in striking contrast to the majority of children seen about the town.

Genito Urinary and Venereal Disease Clinics.—Total attendances were 1,140. Total injections given were 2,911 (specific and anti-gonococcal). The greatest difficulty is to overcome the irregular attendances of patients—one or two local treatments for cervical conditions, or injections followed by improvement, almost always results in the absence of the patients.

Ancylostomiasis Clinic.—This is held weekly with a total of 1,064 treatments. Six treatments are given, and the large majority are freed from parasites.

Diabetic Clinic.—The treatment of these cases as out-patients is very unsatisfactory—mainly because they are unwilling, and in many cases unable, to attend daily and also the question of the restriction of the diet in the home is not an easy one. At present there are eight diabetics attending weekly with an average attendance of two per head per week.

Fertility and Infant Mortality Rates.—These rates are difficult to ascertain with any degree of accuracy owing to the impossibility of obtaining reliable histories. Selecting 100 families at random in the town of Zanzibar, and 100 of mixed race at each of three rural dispensaries the following figures have been compiled :—

		Zanzibar.			Rural Dispensaries.		
		Arabs.	Africans.	Indians.	Selem.	Mkokotoni.	Mwera.
Total number of families	...	100	100	100	100	100	100
Total number of pregnancies	...	208	193	341	263	172	241
Total live births	...	156	143	271	183	130	176
Deaths Neo Natal	...	15	16	7	6	11	7
Deaths Under 1 year	...	14	14	13	38	17	33
Deaths Over 2 years	...	9	27	15	34	19	20
Still births	...	16	19	23	14	20	19
Miscarriages	...	36	31	47	66	22	46

RURAL DISPENSARIES.

Mkokotoni.—There were 1,011 new cases and a total attendance of 2,653. These figures show an advance on those of the previous year and there is no doubt that the clinic is now firmly established. During the year a separate ward for women in-patients was provided to accommodate four beds. Those admitted were mainly cases of yaws or ulcers. Owing to the increase in numbers the present accommodation for out-patients is restricted, and it is expected that adequate accommodation will be provided in 1939. A large number of patients come from Tumbatu Island so that a scheme for a monthly visit to the island was considered, but had to be deferred. The diseases seen in order of frequency were yaws, ancylostomiasis, syphilis, malaria and scabies.

Selem.—There were 440 new cases and a total attendance of 1,829. The chief diseases seen were ancylostomiasis, malaria, syphilis, gonorrhœa, yaws and scabies.

Mwera.—There were 398 new cases and the total attendances were 1,448. This clinic has grown and attendances are mounting steadily. The diseases seen showed the same incidence as at Selem.

Ziwani Police Lines.—This clinic was re-opened during the last few weeks of the year. Results, so far, are not encouraging.

SECTION VI.

HOSPITALS AND DISPENSARIES.

In the following tables A and B details of the work carried out at the various Government hospitals and dispensaries are tabulated.

Table A.

Medical Units, Beds and Patients by Districts.

	Zanzibar Island.		Pemba Island.		
Medical Units.	Town.	District.	Town.	District.	Total
European Hospital ...	1	—	—	—	1
Asiatic and African Hospital ...	1	2	3	—	6
Police Lines ...	1	—	—	—	1
Prison Infirmary ...	1	—	—	—	1
Infectious Disease Hospital ...	1	—	—	—	1
Walezo Poor House ...	—	1	—	—	1
Makondeni Leper Colony ...	—	—	—	1	1
Sub-Dispensaries ...	1	15	—	7	23
Mental Hospital ...	1	—	—	—	1
Eye Clinic ...	1	—	—	—	1
School Clinic ...	1	—	—	—	1
Walezo Leper Colony ...	—	1	—	—	1
In-Patients.					
Beds available:					
European ...	14	—	—	—	14
Asiatic and African in Hospital ...	118	14	105	—	237
African in Institutions ...	81	192	—	—	273
Total ...	213	206	105	—	524
Cases admitted:					
European ...	104	—	—	—	104
Asiatic and African in Hospital ...	2,727	510	1,651	—	4,888
African in Sub-Dispensaries ...	—	107	—	—	107
Total ...	2,831	617	1,651	—	5,099
Out-Patient Attendances.					
Hospitals ...	136,747	42,530	70,923	—	250,200
Sub-Dispensaries ...	39,982	69,697	—	46,760	156,439
Total ...	176,729	112,227	70,923	46,760	406,639
New Cases.					
European ...	343	—	—	—	343
Asiatic and African in Hospital ...	32,167	12,464	27,819	—	72,450
African in Sub-Dispensaries ...	8,630	25,197	—	14,741	48,568
Total ...	41,140	37,661	27,819	14,741	121,361

TABLE B.

List of Sub-Dispensaries.

ZANZIBAR DISTRICT.

Name.		New Cases.	Attendances.
School Clinic	...	2,880	3,613
Mkokotoni	...	3,318	7,697
Selem	...	3,640	8,877
Makunduchi	...	3,513	5,931
Dole	...	501	487
Mwera	...	2,797	4,060
Chaani	...	1,053	1,659
Uzini	...	392	462
Kizimbani	...	1,571	4,379
Bububu	...	415	803
Bweleo	...	1,643	2,973
Kizimkazi	...	1,411	3,149
Mangapwani	...	375	1,757
Chwaka	...	1,621	2,383
Tunguu	...	1,677	5,163
Mbiji	...	2,413	5,110
Travelling	...	5,562	6,025
Mwembeladu	...	8,630	31,315
Ndijani	...	253	159

PEMBA DISTRICT.

Name.		New Cases.	Attendances.
Mzambaraoni	...	1,303	3,008
Matangatwani	...	2,276	6,776
Kinazini	...	1,902	3,543
Stambuli	...	1,540	3,998
Ole	...	1,707	4,497
Kengeja	...	3,992	5,970
Kangani	...	2,021	4,227

SECTION VII.

REPORT ON THE GENERAL HEALTH OF THE PRISONERS AND SANITATION IN ZANZIBAR PRISONS.

A. PRISONS.

		Daily average in Prison.	Daily average on sick list.	Deaths.	Death rate.
Central Prison	...	136.63	8.65	3	18.8
Wete	...	13.17	0.41	—	
Chake Chake	...	9.40	0.60	—	

The health of all prisoners was good. There were no epidemics. The chief diseases encountered were syphilis (68), internal parasites (167), malaria (29), gonorrhœa (6). The daily sick parade consisted mainly of cases of coughs and colds, minor abrasions and constipation.

As a routine all new admissions were examined for evidence of syphilis, intestinal parasites and gonorrhœa. Blood, stools and blood smears were sent to the laboratory as a routine.

The following table shows the laboratory findings on the specimens submitted:—

		Positive.	Negative.	Doubtful.
Kahn Test	...	31	127	37
Blood for Malaria Parasites	...	29	75	—
Smears for gonorrhœa	...	6	2	—
Stools for dysentery	...	2	18	—
Urine for Bilharzia	...	26	213	—
Sputum for tubercle bacillus	...	3	10	—
Stools for intestinal parasites	...	167	100	—

One case of typhoid fever occurred in the prison during the year and the stools of all the prisoners were cultured in an unsuccessful attempt to trace a carrier.

The three deaths were due to pneumonia in two cases and to post operative shock in the third.

Avitaminosis is present amongst many of the new admissions to the prison but considerable improvement occurs after about one month with adequate feeding.

Pemba Prisons.

The District Medical Officer reports that the health of the prisoners was excellent and the chief causes for attendance at hospital were malaria, minor injuries and bronchial cattarrh. The prison sanitation was satisfactory the whole year.

B. MENTAL HOSPITAL.

Details of admissions, discharges and deaths during 1938 were as follows:—

		Males.	Females.	Total.
Remaining on 31st December, 1937	...	30	16	46
Admitted during 1938	...	15	3	18
Died during 1938	...	2	1	3
Discharged during 1938	...	7	5	12
Remaining on 31st December, 1938	...	36	13	49

All the three deaths were due to general debility.

The types of insanity prevailing at the end of the year were:—

		Males.	Females.
Mania	...	11	2
Melancholia	...	14	6
Dementia	. .	5	4
Dementia praecox	...	4	1

As stated each year, the above diagnoses cannot be regarded as strictly accurate.

The Health of the Patients.—The routine examination of the bloods and stools of new admissions was continued during the year and appropriate treatment was administered.

The health of the patients was satisfactory. The diet scales introduced in 1935 were continued without any modification. Almost all patients were found to be suffering from semi-starvation on admission and improved in health within a few days of their admission.

Sanitation.—The asylum premises were always clean and well kept.

Accommodation was satisfactory in 1938. Two patients were discharged cured, two repatriated to Muscat and eight were discharged to the care of their relatives.

C. WALEZO INFIRMARY FOR THE POOR.

The figures for 1938 regarding the inmates of the Infirmary were:—

	Males.	Females.	Total.
Remaining on 31st December, 1937 ...	71	29	100
Admitted during 1938 ...	357	77	434
Discharged during 1938 ...	238	41	279
Died during 1938 ...	84	35	119
Remaining on 31st December, 1938 ...	106	30	136

Some overcrowding occurred during the year but makeshift arrangements tided over the more difficult weeks. A new kitchen of the smokeless type was built during the year and has been a great convenience.

During the year this institution, and the others centred at Walezo, suffered a very serious loss by the death of the Roman Catholic nun in charge. Sister Friedaberta had devoted nearly 30 years of her life to work at Walezo amongst the poor, the lepers and the tuberculosis patients. She was an almost legendary figure and she controlled her very difficult family of over two hundred people with tact, kindness and the necessary firmness. She was a born administrator and was beloved by all with whom she came in contact. She will be missed and her place will be difficult to fill.

D. WALEZO TUBERCULOSIS ASYLUM.

The years figures for this institution were:—

	Males.	Females.	Total.
Remaining on 31st December, 1937 ...	22	—	22
Admitted during 1938 ...	61	—	61
Discharged during 1938 ...	33	—	33
Died during 1938 ...	32	—	32
Remaining on 31st December, 1938 ...	18	—	18

There is nothing new to report about this unit. The work was continued in a satisfactory way during the year.

E. LEPER SETTLEMENT.

I. WALEZO.

The details for the year were:—

	Males.	Females.	Total.
Remaining on 31st December, 1937 ...	34	21	55
Admitted during 1938 ...	8	2	10
Discharged during 1938 ...	3	—	3
Died during 1938 ...	4	4	8
Remaining on 31st December, 1938 ...	35	19	54

In 1938 eight new huts were built for new admissions. All the old huts were re-thatched, whitewashed and some minor repairs were carried out to each hut.

No case of leprosy was discharged cured, but three burnt out cases were allowed to go and live in their houses outside the colony.

II. MAKONDENI (PEMBA).

The details for the year were:—

		Males.	Females.	Total.
Remaining on 31st December, 1937	...	39	24	63
Admitted during 1938	...	9	3	12
Discharged during 1938	...	2	—	2
Absconded during 1938	...	1	—	1
Died during 1938	...	10	—	10
Remaining on 31st December, 1938	...	35	27	62

Certain structural improvements were carried out during the year. As a result of the routine examination in 1937, when it was discovered that nearly 50% of the lepers harboured malaria parasites in their blood, it was decided to carry out a survey of the anopheline breeding grounds early in 1938; this was done and revealed two main breeding foci.

The first area has not been seriously tackled this year although a drain has been made connecting some of the water holes.

Starting in November the other, a large swamp to the north and east, was hacked clean of growth for a distance of approximately 3,500 square yards. This led to some drying up, but later a central drain was dug for a distance of 1,050 feet. The mosquitoes in the settlement show signs of diminishing in number, and it is hoped to continue with the anti-mosquito work during 1939.

CARE AND TREATMENT OF PATIENTS.

The lepers obtain their basic foodstuffs from Government and are given pocket money in addition. The Agricultural Officer kindly arranged the planting of extra fruit trees in the settlement.

It is the mental characteristic of most lepers that they prefer to regulate their own treatment and dressings. Consequently no compulsion as regards the latter has been enforced. Injections of Chaulmoogra derivatives have been given where requested.

The coincident diseases have again received treatment.

On examination during the last three months of the year sixteen of the inhabitants were bacteriologically negative and clinically arrested, although only four of these were treated with alepol or other so-called specific therapy.

No discharges were made, as most of the arrested cases are maimed by deformities, and they are not welcomed on arrival in their villages. In general, cured cases prefer to remain in Makondeni where they are fed and housed, at the same time receiving permission to visit their villages whenever they desire.

During the year the Walezo leper settlement was visited by the Secretary of the British Empire Leprosy Relief Association—Dr. Muir. An excerpt from his report, printed in the January issue of the Leprosy Review, is given below:—

> "I was pleased to learn that in both institutions the main emphasis in treatment is laid upon attention to complicating diseases and causes of malnutrition. I know of no other institutions in East Africa where anything approaching the generous expenditure of the Zanzibar Government is reached, being in the region of £10 per year per patient, in addition to free land, house, attendance and rugs. The facilities for exercise in the form of farm work is another excellent feature. At Makondeni, despite the fact that no treatment with chaulmoogra derivatives was given during most of the year, three cases have become bacteriologically negative,

clinically arrested and fit for discharge. Of these, one preferred to remain and the other two were discharged. However, of the latter one returned ten days after leaving the institution and requested re-admission, not because she was ill, but because she said she was happier at Makondeni.

"Of the patients I saw at Walezo, very few were suitable cases for special treatment with chaulmoogra or other similar drugs. In most of them the disease was too far advanced, either because of their massive infection or because of crippling disablement."

SECTION VIII.

METEOROLOGY.

All available information is printed in the Blue Book for the Protectorate.

SECTION IX.

ANNUAL REPORT OF THE DENTAL SURGEON.

During 1938 most of my time was given to schools and villages and, through visiting villages and personal talks to the people, many more school dental forms were signed. These talks produced better effects than pamphlets or books —particularly in Pemba.

Every school in the Protectorate was attended to, and it was found that there is not the same objection to treatment as formerly.

Two lectures were given to the teachers of the Government Girls' School on the hygiene and care of the teeth and copies of the lectures are being given to the teachers, who have asked for them.

An interesting survey of the Police was carried out and it was obvious which were mainland natives—they have clean mouths because as children they are taught to clean their teeth after each meal and, even though many of them have lived in Zanzibar for years, they showed few signs of dental disease.

Pemba was visited five times during the year and every school child, whose dental form was signed by its parents, was treated.

WORK DONE.

	Officials and Wives.	Schools.	Native out-patient and villages.	Totals.
Fillings ...	203	915	—	1,118
Root fillings ...	39	32	—	71
Extractions ...	199	467	5,073	5,739
Scale polish ...	25	31	—	56

SECTION X.

(A) ANNUAL REPORT OF THE PATHOLOGICAL LABORATORY, ZANZIBAR.

General Remarks.—The Senior Laboratory Assistant, Mr. A. G. Kark, retired at the end of the year after 18 years' service.

Three strains of Salmonellas were isolated from fæces during the year, which were of interest. These were submitted to the Curator, National Collection of Type Cultures, who very kindly had them identified by Dr. Kauffman. One proved to be the Reading type, while the others were two hitherto unrecorded types.

In the case of relapsing fever, infection occurred in Tanganyika.

PATHOLOGICAL LABORATORY RETURN FOR THE YEAR 1938.

		Positive.	Negative.	Total.
A. PARASITOLOGY.				
Blood.—				
Malaria	...	2,040	7,164	9,235
Micro-filaria	...	30	—	
Spirochæta recurrentis	...	1	—	
Fæces.—				
Ancylostoma	...	2,244	2,158	5,144
Ascaris	...	202		
Trichuris	...	323		
Strongyloides	...	201		
Others	...	6	9	
Urine.—				
Schistosoma hæmatobium	...	91	450	541
B. SEROLOGY.				
Kahn Test.				
Blood	...	1,011	1,833	2,844
Cerebro-spinal fluid	...	1	10	11
Agglutination Tests.—				
Bact. typhosum	...	20	37	57
C. BACTERIOLOGY.				
Blood Cultures.—				
Bact. typhosum	...	4	4	4
Fæces.—				
B. dysenteriæ—Flexner	...	32	197	236
Sonne	...	7		
Bact, typhosum	...	13	163	179
Salmonella group	...	3		
Urine Cultures	...	37	20	57
Sputa for Mycobact. tuberculosis	...	169	401	570
Smears etc. for Gonococci	...	314	347	661
Other cultural and general examinations	...	29	55	84
Vaccines.—				
Gonococcal	1,860 ml.			
Other	80 ml.			
Besredka's antivirus	3,000 ml.			
Water examinations (bacteriological)	...			162
Milk and ice cream ,,	...			21
Rat examinations	...			881

D. BIOCHEMISTRY.

Blood Sugar tolerance tests ...		8
,, Sugar single estimations ...		866
,, Urea ...		63
,, Calcium ...		2
,, Van den Bergh's reactions ...		7
Fractional test meals ...		26
Urine (urea, sugar, albumen, etc.) ...		2,518
Cerebro-spinal fluids (chlorides, sugar, etc.) ...		4

E. GENERAL.

Blood (cell counts, hæmoglobin, etc.) ...		193
Blood (grouping) ...		41

F. HISTOLOGY.

Specimens sectioned ...		34
General (leprosy, gumma, tuberculosis, etc.) ...	15	
Lymphogranuloma (Hodgkin's) ...	2	
Fibroma ...	6	
Neuro-fibroma ...	1	
Carcinoma ...	6	
Sarcoma ...	3	
Teratoma ...	1	

G. AUTOPSIES.

Death due to accidents ...	8	23
,, ,, ,, natural causes ...	6	
,, ,, ,, knife injuries ...	7	
,, ,, ,, suicide ...	2	

H. MEDICO-LEGAL.

Material from 15 cases was examined and reported on ...		15
Total examinations ...		24,491

(B) SCIENTIFIC.

Scientific papers published during the year 1938 by members of the Medical Staff:

Acute Funiculitis in Zanzibar, by Dr. S. M. Vassallo.
The East African Medical Journal, Vol. VX, No. 9.

RETURNS.

TABLE I.

SANCTIONED ESTABLISHMENT, 1938.

ADMINISTRATION DIVISION.

Director of Medical Services.
10 Clerks.

SPECIAL APPOINTMENTS.

1 Senior Specialist Officer.
1 Dental Surgeon.

MEDICAL DIVISION—GENERAL.

1 Senior Medical Officer.
8 Medical Officers.
7 Sub-Assistant Surgeons.
2 Senior Native Medical Assistants.
2 Asiatic Midwives.
2 Asiatic Nurses.
4 Asiatic Dispensers.
1 Asiatic Cook.

NURSING STAFF.

1 Matron.
10 Nursing Sisters.

SANITATION DIVISION.

1 Sanitary Superintendent.
4 Asiatic Sanitary Inspectors.

LABORATORY.

1 Pathologist.
1 Laboratory Assistant (Asiatic).
1 Senior Laboratory Assistant (Asiatic).

Table II.

FINANCIAL.

		1938.	
		£	£.
A. Expenditure—Medical Department.			
Personal Emoluments	...	24,916	
Other Charges:—			
General Stores	...	1,534	
Drugs, Dental and Surgical Requisites	...	3,331	
Maintenance of Patients	...	4,457	
Passages	...	1,408	
Sanitation Labour	...	1,298	
Grants to Lepers	...	119	
Miscellaneous Services	...	3,095	40,158
B. Expenditure—Municipality.			
Personal Emoluments	...	2,761	
Other Charges:—			
Equipments and Stores	...	297	
Sanitation Labour	...	4,123	7,181
C. Revenue.			
Hospital Fees, Sale of Drugs, etc.	...	2,017	
Contribution from other dependencies towards the Quarantine Services	...	2,475	4,492

Table III.

RETURN OF STATISTICS OF POPULATION.

All the information available is in the Protectorate Blue Book.

Table IV.

METEOROLOGICAL RETURN.

The following is a brief summary of the more important meteorological returns available for the year, compared with the mean for the years 1892-1937 in the case of Zanzibar and the mean for the years 1899-1937 in the case of Pemba:—

	Zanzibar (town)		Pemba (Wesha)	
	1892-1937	1938.	1899-1937	1938.
Mean of daily maxima ...	80.3	86.0	86.2	85.9
Mean of daily minima ...	73.7	74.1	72.8	71.7
Mean of daily range ...	12.6	11.9	13.4	14.2
Mean ...	80.0	80.0	79.5	78.8
Rainfall (inches) ...	62.47	73.80	77.40	80.4
Rainy days ...	143	161	146	161

TABLES V AND VI.

Return of Diseases and Deaths for the Year 1938.

	DISEASES	TABLE V					TABLE VI
		Remaining in Hospital at end of 1937	Yearly Admissions	Total Cases Treated	Total Deaths	Remaining in Hospital at end of 1938	All Cases including both In- and Out-Patients
1.	Enteric Group—						
	(*a*) Typhoid fever	...	10	10	...	2	20
	(*b*) Paratyphoid fever	...	...	...	...	...	...
2.	Typhus fever	...	...	...	...	...	...
3.	Relapsing fever	...	...	...	...	...	...
4.	Undulant fever	...	...	...	...	...	...
5.	Small-pox	...	...	...	...	...	...
6.	Measles	...	9	9	...	...	113
7.	Scarlet fever	...	...	...	...	...	...
8.	Whooping cough	...	...	...	...	...	35
9.	Diphtheria	...	...	...	...	...	2
10.	Influenza—						
	(*a*) With respiratory complications	...	...	...	...	...	1
	(*b*) Without respiratory complications	1	73	74	...	...	1,353
11.	Cholera	...	...	...	...	...	...
12.	Dysentery—						
	(*a*) Amœbic	...	...	...	...	...	2
	(*b*) Bacillary	...	34	34	...	1	69
	(*c*) Unclassified	1	5	6	2	...	40
13.	Plague—						
	(*a*) Bubonic	...	...	...	...	...	...
	(*b*) Pneumonic	...	...	...	...	...	...
	(*c*) Septicæmic	...	...	...	...	...	...
14.	Acute poliomyelitis	...	...	...	...	...	...
15.	Encephalitis lethargica	...	...	...	...	...	...
16.	Cerebro-spinal fever	...	...	...	...	...	...
17.	Rabies	...	...	...	...	...	...
18.	Tetanus	...	4	4	2	...	9
19.	Tuberculosis of the respiratory system	22	139	161	56	26	333
20.	Other tuberculous diseases	5	13	18	2	...	31
21.	Leprosy	118	13	131	8	116	158
22.	Venereal diseases—						
	(*a*) Syphilis	10	68	78	1	6	907
	(*b*) Gonorrhœa	...	50	50	...	1	1,266
	(*c*) Other venereal diseases	...	4	4	...	2	72
23.	Yellow fever	...	...	...	...	...	...
24.	Malaria—						
	(*a*) Benign tertian	...	45	45	...	2	619
	(*b*) Subtertian	3	135	138	2	1	1,788
	(*c*) Quartan	...	...	...	...	...	28
	(*d*) Unclassified	...	140	140	4	4	6,432
25.	Blackwater fever	...	4	4	1	...	10
26.	Kala-azar	...	...	...	...	...	...
27.	Trypanosomiasis	...	...	...	...	...	...
28.	Yaws	1	12	13	...	2	4,616
29.	Other protozoal diseases	...	...	...	...	...	...
30.	Ancylostomiasis	22	288	310	17	25	11,340
31.	Schistosomiasis	1	22	23	...	1	431
32.	Other helminthic diseases	...	5	5	...	...	260
33.	Other infectious and/or parasitic diseases	2	61	63	11	1	603
34.	Cancer and other tumours						
	(*a*) Malignant	...	29	29	11	5	53
	(*b*) Non-malignant	...	35	35	1	1	133
	(*c*) Undetermined	...	...	...	...	...	...
35.	Rheumatic conditions	...	6	6	...	2	1,636
36.	Diabetes	4	40	44	7	3	113
37.	Scurvy	...	...	...	...	...	...
38.	Beri-beri	...	...	...	...	...	2
39.	Pellagra	...	...	...	...	...	1
40.	Other diseases						
	(*a*) Nutritional	9	32	41	1	7	516
	(*b*) Endocrine glands and general	1	4	5	1	...	13
41.	Diseases of the blood and blood-forming organs	1	13	14	4	...	1,188
42.	Acute and chronic poisoning	1	4	5	1	...	101
43.	Cerebral hæmorrhage	...	11	11	6	1	21
44.	Other diseases of the nervous system	59	78	137	8	68	1,995
45.	Trachoma	...	1	1	...	...	140
46.	Other diseases of the eye and annexa	2	55	57	...	1	3,417
47.	Diseases of the ear and mastoid sinus	...	13	13	...	...	2,054
48.	Diseases of the circulatory system—						
	(*a*) Heart diseases	3	31	34	12	...	118
	(*b*) Other circulatory diseases	3	69	72	4	3	318
49.	Bronchitis	2	145	147	2	2	4,385
50.	Pneumonia						
	(*a*) Broncho pneumonia	...	24	24	7	...	67
	(*b*) Lobar-pneumonia	9	232	241	73	9	494
	(*c*) Otherwise defined	...	...	...	...	...	24
51.	Other diseases of the respiratory system	4	73	77	8	4	2,160
52.	Diarrhœa and enteritis—						
	(*a*) Under two years of age	...	2	2	...	...	158
	(*b*) Over two years of age	3	83	86	7	1	889

TABLES V AND VI.—*contd.*

DISEASES	TABLE V					TABLE VI
	Remaining in Hospital at end of 1937	Yearly Admissions	Total Cases Treated	Total Deaths	Remaining in Hospital at end of 1938	All Cases including both In- and Out-Patients
53. Appendicitis	2	21	23	1	1	43
54. Hernia and intestinal obstruction	17	256	273	10	16	650
55. Cirrhosis of the liver	...	9	9	4	...	21
56. Other diseases of the liver and biliary passages	1	20	21	2	1	114
57. Other diseases of the digestive system	3	225	228	29	5	17,419
58. Nephritis (all forms)—						
(*a*) Acute	2	26	28	6	5	59
(*b*) Chronic	1	22	23	7	...	55
59. Other non-venereal diseases of the genito-urinary system	26	506	532	28	30	3,149
60. Diseases of pregnancy, childbirth and the puerperal state—						
(*a*) Abortion	...	15	15	...	...	35
(*b*) Ectopic gestation	1	...	1	...	...	1
(*c*) Toxæmias of pregnancy	...	...	...	...	...	...
(*d*) Other conditions of the puerperal state	3	121	124	10	3	248
61. Diseases of the skin, cellular tissue, bones and organs of locomotion	53	913	966	31	58	31,564
62. Congenital malformations and diseases of early infancy—						
(*a*) Congenital debility (children under one year)	...	...	...	...	...	1
(*b*) Premature birth	...	1	1	1	...	5
(*c*) Injury at birth	...	...	...	...	...	...
(*d*) Others	...	5	5	...	2	16
63. Senility	68	191	259	104	92	640
64. External causes—						
(*a*) Suicide	...	...	...	...	...	...
(*b*) Other forms of violence	30	404	434	26	21	9,212
65. Ill-defined causes	16	132	148	11	10	4,136
66. Diseases of the lymphatic system	6	106	112	2	11	660
67. Diseases of the nasal passages and accessory sinuses	...	12	12	...	...	2,568
68. Ante-natal and child welfare consultations	...	...	...	...	...	231
Total	516	5,099	5,615	531	552	121,361
Examinations		...	...	...	...	807
GRAND TOTAL	516	5,099	5,615	531	552	122,168

APPENDIX I

REGISTRATION OF MEDICAL PRACTITIONERS, DENTISTS AND DRUGGISTS.

At the beginning and at the end of the year there were on the Register 26 medical practitioners, 9 licensed medical practitioners, 5 dentists and 19 druggists. Actually resident in the Protectorate at the end of the year there were 20 registered medical practitioners, 9 licensed medical practitioners, 2 dentists and 17 druggists, of whom 11 registered medical practitioners, 8 licensed medical practitioners, 5 druggists and 1 dentist were in Government Service.

APPENDIX II

CONTROL OF OPIUM.

The following are the particulars regarding opium addicts:—

	1936.		1937.		1938.	
	M.	F.	M.	F.	M.	F.
Number of opium addicts remaining from the previous year ...	41	15	39	16	33	15
Number of applications for permits during the year ...	1	—	2	1	4	—
Number of permits granted during the year ...	1	—	2	1	4	—
Number of permits refused during the year ...	—	—	—	—	—	—
Number of permits cancelled:—						
(a) Owing to death ...	2	—	—	—	3	1
(b) Owing to other cause ...	4	1	—	—	2	—
Number of opium addicts remaining at the end of the year ...	39	16	33	15	32	14
	ozs.		ozs.		ozs.	
Amount of opium issued to addicts during the year ...	384½		360.3		333.5	
	Shs.	Cts.	Shs.	Cts.	Shs.	Cts.
Amount received in payment for opium issued ...	3,820	67	3,603	00	3,335	34
